

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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EDITORIAL COMMENT.

The Aerial Derby.

To-day's race for the Aerial Derby, in connection with which the *Daily Mail*, which has done so much for the development of aviation, has provided handsome prizes, looks like being a wonderful success. The entry list is an excellent one, including as it does the name of nearly every famous airman in the country and every well-known type of machine. The route has been selected with an eye not only to making the event a real circuit of London but so that the maximum amount of public interest may have a full chance of being actively manifested. Nothing is wanting save something like favourable weather conditions to make it an unqualified success.

It is said that out of evil comes forth good, and it may be that the ill-judged interference of the authorities, which compelled the postponement of the race from the date originally fixed, may have actually been of benefit. For one thing, it gave the race in particular and the aviation movement in general an advertisement which it could have obtained in no other way. Had it been found impossible after all to promote the event, that advertisement would have been a poor substitute for the race itself, but now that we have had the publicity, with the race to follow, perhaps that interference was all to the good. Not that we can approve either the act or its

motives, for reasons that we set forth at considerable length at the time. But, after all, all's well that ends well, and we would not be so ungracious as to unduly criticise those who first stood in the way and have now reconsidered the position. All that remains is to congratulate all concerned on the successful outcome of the negotiations with the authorities which has made the event possible.

The Vol Piqué.

We publish this week part of an article by Mr. J. H. Hume-Rothery, who has been investigating the mathematical aspects of the dive. Mr. Hume-Rothery's work is familiar to our readers, and the more serious students will need no recommendation from us to make them turn their attention to his analysis.

It has been a labour of love that the author has thus brought to a conclusion, for although he has spared his readers the necessity of wading through the detail of his calculations they nevertheless exist, and the process of making them must often have seemed endless.

There can be no question as to the practical importance of the problem in which Mr. Hume-Rothery has thus interested himself. It has long been recognised that a stalled aeroplane needs a certain height in which to recover, but thus far it has been by no means clear as to what that height might be.

One of the most interesting practical experiments on the subject was made by Orville Wright some time ago, and is thus described in a letter that Mr. Griffith Brewer wrote from America to Mr. Alec Ogilvie in England.

"Orville has been going into the cause of a number of accidents where for some unexplained reason the machine has suddenly pointed downwards and has not been corrected before coming into contact with the ground. This type of accident has occurred in several cases after gliding down from a considerable height, and after being straightened out at perhaps 50 ft. from the ground the machine is seen to turn downwards and to continue to turn down until it strikes the ground.

"In some cases such accidents have been attributed to the fouling of the control wires, but in an inquest held by the American authorities on the wreck of an army machine the control wires were found to be intact.

"The conclusion that Orville has come to is that these accidents are caused by the stalling of the machine, and he has been making experiments in the air in order to test the effect of stalling in actual practice. He went to the height of 300 ft., and stalled the machine, and as he had expected the machine turned slowly downwards, and for a period of at least five or six seconds after first stalling the elevator tail was useless and the moving of the lever had no effect on the

inclination of the machine whatever. The machine pointed downward at a very steep angle, possibly 60°, before it had gathered sufficient speed to bring it under control. Instead of dropping 50 or 60 ft. in this recovery, however, he dropped about 200 ft. before he could straighten her out, and he says that he did not stall her to the worst position possible, and he would not be surprised if it would be necessary in some instances to have 300 ft. clear below to enable the stalling to be corrected in time to save a smash."

For real progress in any science it is necessary to tackle the problem from every side, for it is only by such concerted action that theory for future use is established on a sure foundation of fact. Being a mathematician, Mr. Hume-Rothery naturally approaches the question from that aspect, but in devoting so many months' hard work to its investigation he none the less performed his share of service to the cause.

Aircraft in Manœuvres. While as yet the rôle of aircraft in war remains more or less of an unknown—or at least a doubtful—quantity, if the lessons of mimic warfare are of the slightest account, it is being demonstrated more and more every day that they will play a most important, if not decisive, effect on the warlike operations of the future. In the light of all that has been said and written, both by those who know and those who only assume to possess a knowledge of the problem, this may almost sound like the repetition of a platitude, but when the subject comes to be more closely examined, it is seen that it is very far removed from that. We do not know as yet precisely what the value of aircraft will be to the future commander in the field. So much may be taken as admitted, but we can go a step farther and say that it is equally admitted that they will possess considerable value, both positive and negative. In considering the proposition as a whole, we must not forget that both aeroplane and airship are as yet in a quite undeveloped stage. True, enormous progress has been made, but it is very safe to assume that far more remains to be done than has hitherto been accomplished. However, it is not our purpose to enter into an academic argument as to future possibilities, but rather to examine what has already been done and is in process of doing, in the light of lessons learnt during recent and current manœuvres. It is at this time of the year, when all the great European armies hold their grand manœuvres, that these lessons are most prolific and pregnant, with at least the possibilities for prophecy.

Taking the German army operations first, since they have been the first to be brought to a conclusion, we find that considerable use was made of aircraft, both airships and aeroplanes. Reading the published reports of the operations, it scarcely seems that there is much in the way of material for the outside observer such as ourselves to base opinions upon. The two opposing armies appear to have been early in tactical contact, when the value of reconnaissance by air is in all probability likely to be of the least value, since by that time dispositions have been made finally and, considering the immense front over which the modern line of battle must extend, renders them relatively unalterable. It is during the preliminary strategical movements that we conceive that aircraft will be of the greatest use to opposing commanders. However, to return to the German manœuvres, we find that the aircraft employed were held to have fully justified their existence, in spite of the disaster to the naval Zeppelin Lt. One exceedingly interesting incident is recorded, in which one of the Zeppelin craft actually flew

over the opposing forces, destroyed an aeroplane station by dropping bombs upon it, and returned safely to its friendly base, although pursued by aeroplanes, which strove to put it out of action. It is, of course, quite unsafe to deduce dogmatic conclusions from a solitary instance such as this, particularly when only the bare facts as outlined are available, but the incident is nevertheless not without its special significance. In his review of the operations, the Kaiser himself laid special stress on the excellent work accomplished by aircraft, which appear to have done generally excellent work. Apart from the incident detailed above, aeroplane scouts of the "Red" army discovered the detrainment of a "Blue" division, although every precaution was taken, and the work was done, as far as possible, under cover of darkness. Taken all round, therefore, the German manœuvres may be said to have still further driven home the lesson that aircraft will be absolutely indispensable in the wars of the future.

At the present moment the French manœuvres have only just begun, and from them, even more than from those so recently concluded in Germany, there will be valuable data to be gathered. Even in the preliminaries several very significant things have happened. It has been decreed that this year the air-fleets employed with the opposing armies shall operate as nearly as possible under actual war conditions. All the "squadronettes" have been ordered to report themselves to the headquarters to which they are assigned at a certain time on a certain date, and they must furthermore reach their destinations by actual flight. In this connection a remarkable achievement was registered by a "squadronette" commanded by Capt. Estrac. It had to reach Toulouse from Mourmelon, a distance of roughly 500 miles, and arrived at its flying centre punctually to the day and time appointed, complete as to its whole organisation, with motor trucks and all appurtenances. Surely when aircraft can be moved about in this way, absolutely as complete and self-contained units, it is not stretching the facts to say that the aeroplane as a part of the war equipment of a modern army has really arrived.

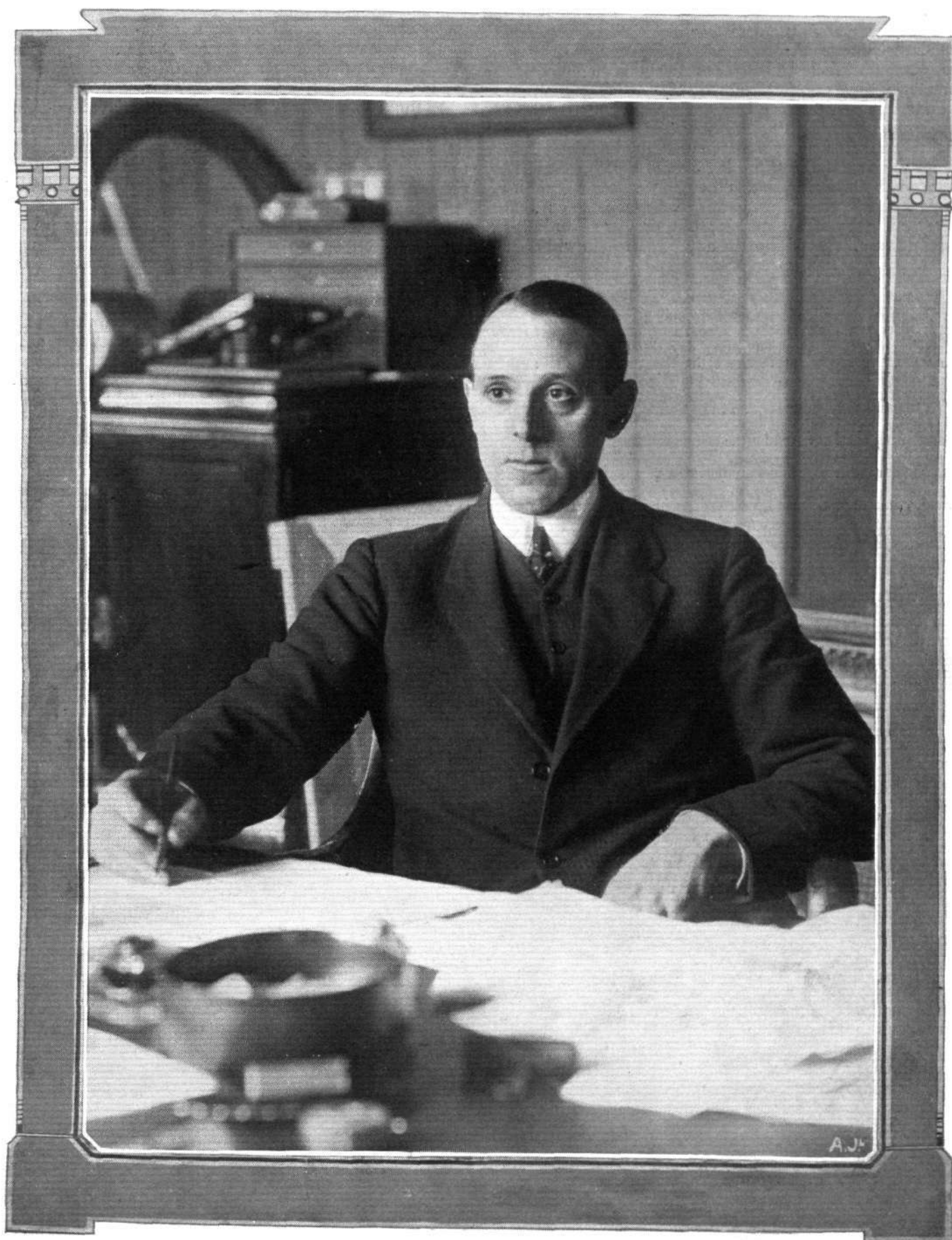
Coming now to operations nearer home, it is evident that unprecedented use is to be made of aircraft, both aeroplanes and airships, in our own Autumn manœuvres. According to official statements, one of the new Naval airships will be employed, in addition to the "Delta," and probably the new Army craft, "Eta." One complete aeroplane squadron (No. 3) of the Military Wing will operate with the "Brown" army, while "White," will have at his disposal detachments from Squadrons No. 4 and 5, a detachment from the Flying Depot, and one lent by the Naval Wing. There is only one comment which seems to be called for at the moment, and that is that it seems passing strange, after all the "assurances" we have heard as to the preparedness of the army to hold its own in the air, that it has been found necessary to borrow from the Navy for the purposes of these operations. It may be that the War Office is wishful to give the flying officers of the Navy some little experience of flight in connection with land operations, but we have our doubts as to this, and are once more forced to the conclusion that all is not as well as Col. Seely and his advisers would have us believe.

We can only hope that one salient result of the forthcoming manœuvres will be to once more drive home the lesson that modern conditions of war render preparedness in the air just as essential as it is in any other department of the fighting services.

SEPTEMBER 20, 1913.

FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT. British Pilots.



THE LONDON AERODROME, HENDON.
MR. RICHARD T. GATES (Director and General Manager).

MR. RONALD KEMP'S "ACCIDENT."

WE have received a letter from Mr. Ronald C. Kemp advising us that his accident was merely a daily press story. We congratulate him on his escape, for what was reported was certainly an event that would have been singularly unpleasant. The correctness or otherwise of the report on which we based our remarks on belts and parachutes does not, however, as we implied at the time, in any way affect the moral of the deduction. In these days when pilots like Pegoud fly upside down for the fun of the thing, it is surely no stretch of the imagination to accept the hypothesis of turning over in the air as a basis for a small discussion, and although we naturally desire to give equal prominence to Mr. Kemp's statement that there was no sort of mishap, but only "an ordinary spiral descent," we do not in any way wish to withdraw

the arguments that we built upon the supposed happening.

Incidentally, the present occasion gives us an opportunity of asking those of our readers who are not already in the habit of doing so, to be good enough to correct misstatements that appear about them in the daily press. We must necessarily take note of those statements, and when those whom they concern do not take the trouble to correct them, we can only presume that they are substantially true. At any rate, it is illogical to be annoyed at the repetition of a mis-report if one is initially indifferent to its inaccuracy, and as we naturally desire to avoid both the inaccuracy itself and the irritation of our readers, we can only ask them thus to assist us in our work.



ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending September 13th:—

No. 1 (Airship) Squadron. South Farnborough.—The "Beta" and "Eta" were out every day throughout the week. The "Eta" passed a satisfactory eight hours' test on the 13th, going to Brighton, Portsmouth, round the Isle of Wight, and back to Farnborough.

The Kiting Detachment went down to Shoeburyness on the 8th, and returned on the 10th.

Advanced parties have left for the manœuvre area.

No. 2 (Aeroplane) Squadron. Montrose.—This squadron is engaged with the Irish Command Manœuvres.

No. 3 (Aeroplane) Squadron. Netheravon.—B.E.'s, Henry Farmans, and Blériots were up throughout the week. The three

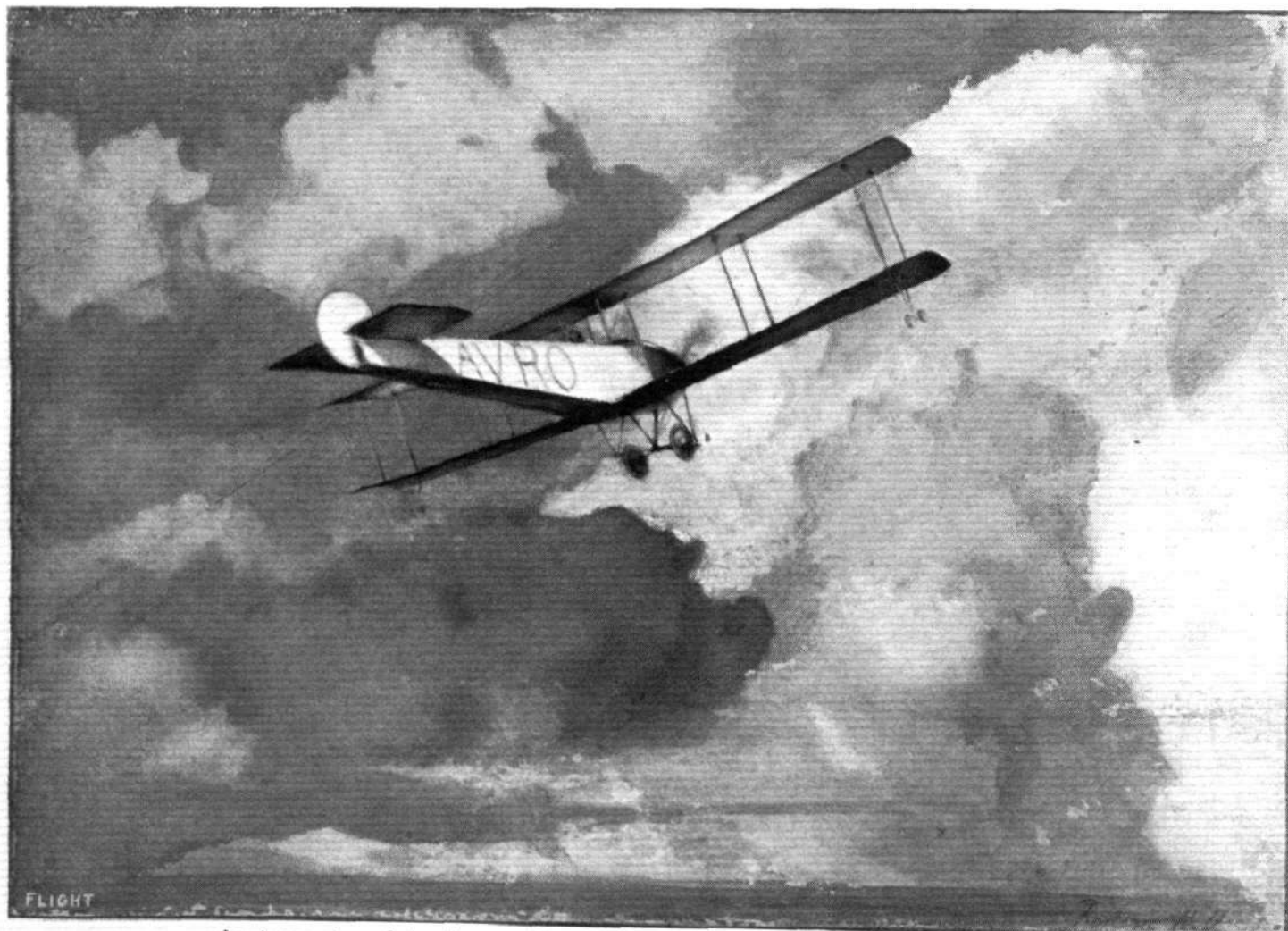
flights of this squadron have left Netheravon for various points to take part in Divisional and Inter-Divisional training.

No. 4 (Aeroplane) Squadron. Netheravon.—This squadron was kept busy preparing for manœuvres. Breguets and M. Farmans were flying. On the 13th all the machines flew to Farnborough, and will proceed to the manœuvre area early this week.

No. 5 (Aeroplane) Squadron.—The M. Farmans were out daily practising reconnaissance work.

This squadron will leave for manœuvres early this week, joining up with No. 4 Squadron and a "flight" from the Naval Wing.

Flying Depôt. South Farnborough.—Several new machines were taken over from the Royal Aircraft Factory during the week, and officers were busy flying them and getting them ready for manœuvres. Experimental work on B.E.'s was continued.



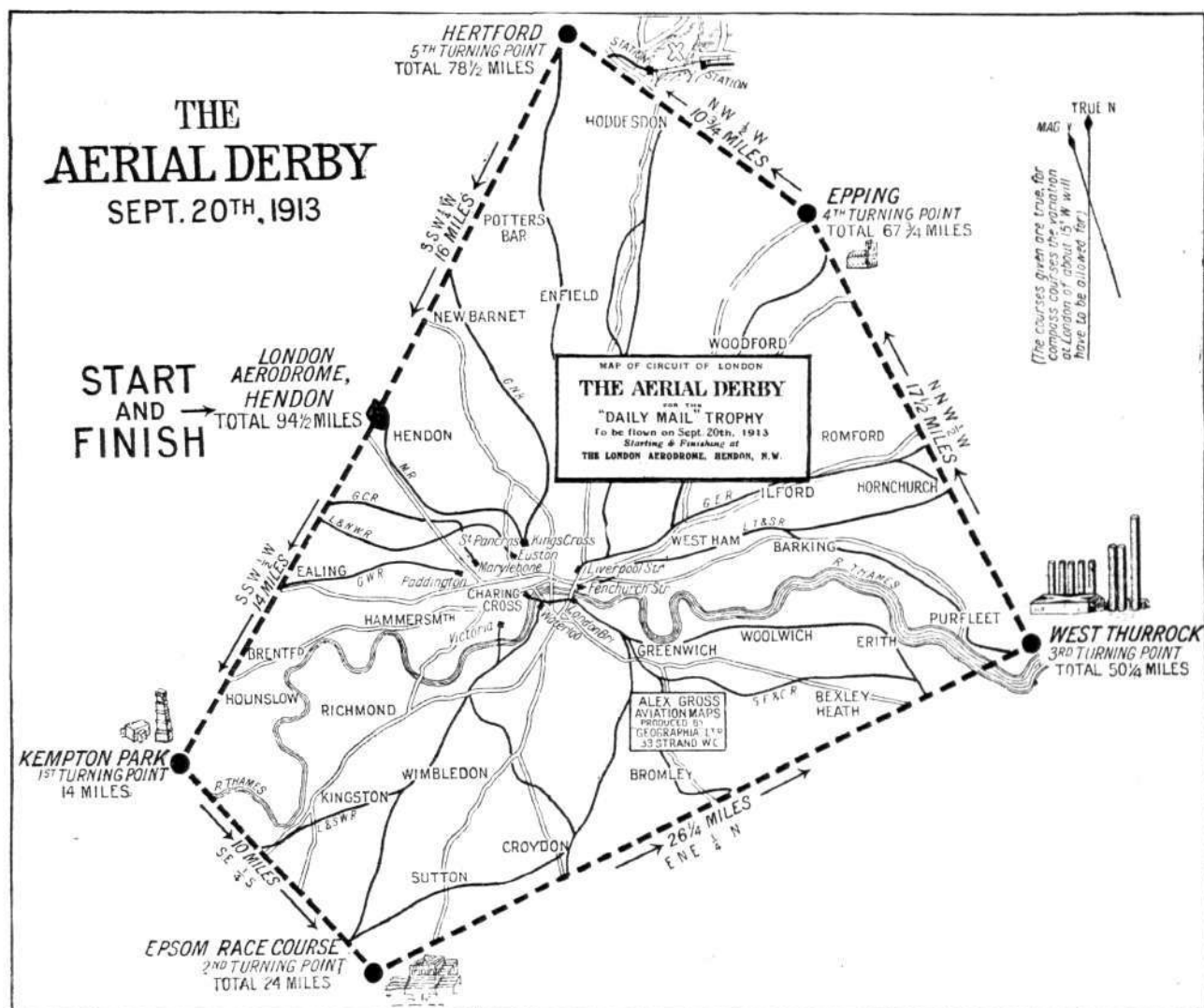
An impression of the Avro at Hendon. From an original drawing by Roderic Hill.

THE AERIAL DERBY.

As briefly announced last week, the Aerial Derby, weather permitting, takes place to-day, Saturday, starting from the London Aerodrome, Hendon, at four o'clock. In addition to the Gold Cup value 100 guineas presented by the *Daily Mail* for this event, the winner will also receive a cash prize of £200, whilst a sealed handicap for £200 presented by the Distributors of "Shell" Motor Spirit, will also be run off in connection with the race. This innovation gives a sporting chance to the slower machines of obtaining a prize, and thereby induces a good field for the public to watch. When entries closed for the event on Monday, the annexed machines had been duly entered.

To enable our readers to closely follow the event in their respective districts and to give them an added interest in enabling them to recognise the various competitors whilst in the air, we publish in addition to a very clear sketch map of the course, giving full particulars of the various turning points, &c., a set of portraits of the pilots as well as a series of photographs of each machine and

| Entries. | | | | Pilot. |
|----------|-----------|----------------|-----------------------|----------------|
| No. 1. | 120 h.p. | Austro-Daimler | Grahame-White | |
| | biplane | ... | ... | L. Noel. |
| " 3. | 60 h.p. | Anzani-Caudron | biplane | E. Baumann. |
| " 4. | 50 h.p. | Gnome | Blériot monoplane | G. L. Temple. |
| " 5. | 80 h.p. | " | H. Farman biplane | P. Verrier. |
| " 6. | 80 h.p. | " | Blériot monoplane | W. L. Brock. |
| " 7. | 80 h.p. | " | Blériot monoplane | B. C. Hucks. |
| " 8. | 80 h.p. | " | Avro biplane | F. P. Raynham. |
| " 9. | 80 h.p. | " | Sopwith biplane | H. Hawker. |
| " 10. | 50 h.p. | Le Rhone | Morane-Saulnier mono. | P. Marty. |
| " 11. | 80 h.p. | " | Morane-Saulnier mono. | R. Slack. |
| " 12. | 120 h.p. | Austro-Daimler | Martin Handasyde | H. Barnwell. |
| | monoplane | ... | ... | Lieut. Porte. |
| " 13. | 110 h.p. | Anzani | Deperdussin monoplane | J. Nardini. |
| " 14. | 45 h.p. | " | Caudron monoplane | G. Hamel. |
| " 15. | 80 h.p. | Gnome | Morane-Saulnier mono. | |



Sketch map of the circuit for the Aerial Derby on Saturday, September 20th, showing the districts over which the competitors will be flying. The controls over which the competitors must pass at the various turning points are defined as follows:—

KEMPTON PARK.—Turning point is square chimney, 230 ft. high, just north of Kempton Railway Station, very dark brown brick, with low building, filter beds and connecting reservoir. In the neighbourhood is a lower chimney (round) with two very large reservoirs.

EPSOM RACECOURSE.—Turning point is the Grand Stand which is at the top of Epsom Downs, making a conspicuous landmark.

WEST THURROCK.—Turning point is the cement works on north bank of the Thames near top of the bend three miles east of Purfleet and slightly to the east of West Thurrock Church. The works consist of a long rectangular buff-coloured building, with a large diagonal white cross on the roof. Five factory chimneys stand in line at equal distances behind the building, flanked by two taller chimneys and a very high one further to the right.

EPPING.—Turning point is Epping Church in centre of Epping village on west side of London Road. 200 yards south of church is a solitary water tower 120 feet high.

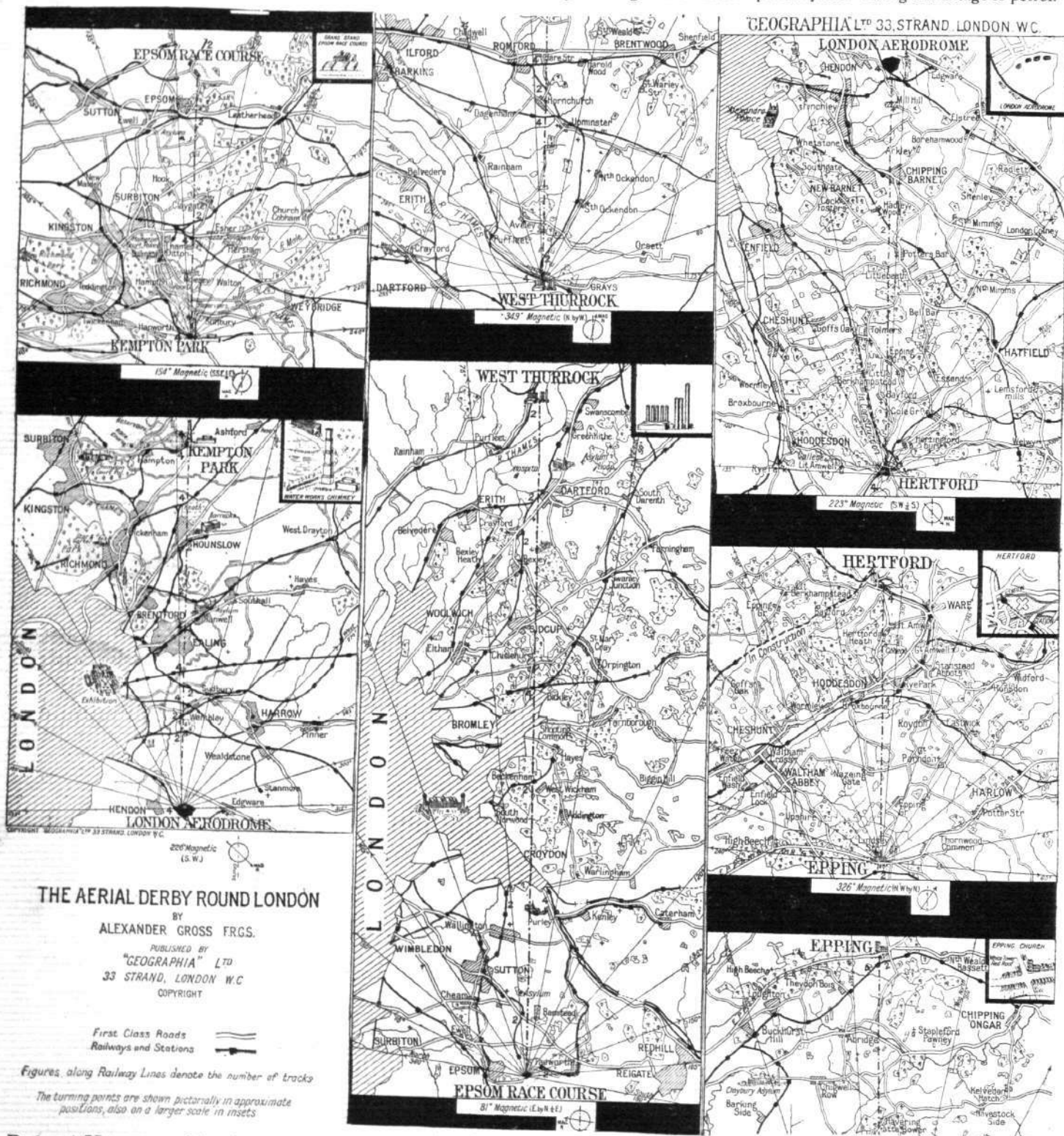
HERTFORD.—Turning point is the large field immediately north of the town adjoining the railway stations, and enclosed on the north, east and west by streams. The actual point will be marked by a large white cross.

silhouettes of each aeroplane as they will be seen when looking up from below to the machine in flight. A little study of these silhouettes should enable anybody with good eyesight to almost unhesitatingly name each machine as it passes through the air. It may be possible that at the last moment either pilots or individual machines may be changed for special reasons, but it may be taken that, speaking generally, the whole of the pilots and machines are complete as given in this issue of FLIGHT.

We also give a reduced facsimile of the route map for the Aerial Derby as used by the various pilots. This shows them exactly where they are with the various recognisable spots below, and in the original full-sized map, which they unroll as they proceed, rivers, streams, lakes, reservoirs, woods and parks are variously coloured so as to

make them instantly recognisable. This reduced map should also be of assistance to our readers by enabling them to get a fair idea in their own district of the range over which the aviators will be most clearly visible, during their flying from turning point to turning point.

Glancing at the list of entries, it will be seen that the machines are very well matched, there being several of the same make and horse-power. For instance, there are two 80 h.p. Blériot monoplanes, two 80 h.p. Morane-Saulnier monoplanes, whilst the 110 h.p. Deperdussin and the 45 h.p. Caudron monoplanes are expected to vie with each other so far as speed is concerned. It will be remembered that the little Caudron monoplane took part in the last Aerial Derby, developing a remarkable turn of speed, and only just failing to reach home—probably first—owing to shortage of petrol.



THE AERIAL DERBY ROUND LONDON

BY
ALEXANDER GROSS FRGS.

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33 STRAND, LONDON W.C.
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First Class Roads
Railways and Stations

Figures, along Railway Lines denote the number of tracks

The turning points are shown pictorially in approximate positions, also on a larger scale in insets

Reduced Map as used by the Aviators competing in the Aerial Derby, showing each section distinctly. The original of the Map is about five feet six inches in length, on which the rivers, streams, lakes and reservoirs are coloured most conspicuously in blue, woods and parks in green. The Map is designed by Alexander Gross, F.R.G.S., and published by "Geographia" Ltd., 33, Strand, W.C.

PILOTS AND HOW TO RECOGNISE THE MACHINES.

No. 1.



Pilot :
Mr. Louis Noel.



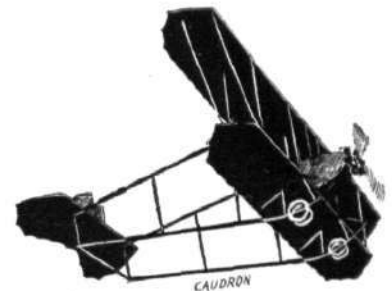
No. 1. The Grahame-White Five-seater Biplane.

This machine may be easily recognised, mainly by its great size, but also by the fact that it has no elevator in front of the main planes. It is also the only machine in the race which has three rudders.

No. 3. The Caudron Biplane is the smallest biplane entered, and is of the tractor type, *i.e.*, the propeller is situated in front of the main planes. The twin rudders are placed on top of the tail plane.

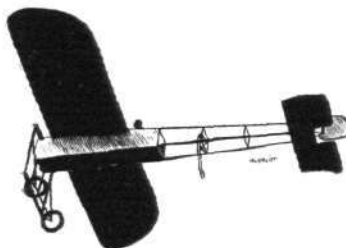


No. 3.



Pilot :
Mr. E. Baumann.

No. 4.



Pilot :
Mr. G. Lee Temple.



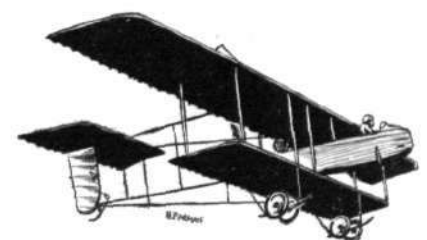
No. 4. The 50 h.p. Blériot Monoplane.

This machine may be recognised by its rounded wing tips. Another characteristic feature is that the *fuselage* or body is only covered with fabric up to a point a short distance behind the trailing edge of the wings, the rear portion of it being left uncovered.

No. 5. The Henry Farman Biplane resembles the Grahame-White 5-seater in that it has no front elevator, but it may be easily distinguished from that machine as it is much smaller, and has only one tail plane and a single rudder.



No. 5.



Pilot :
Mr. P. Verrier.

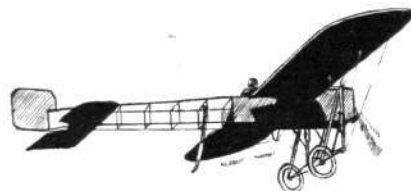
PILOTS AND HOW TO RECOGNISE THE MACHINES.

No. 6. The Two-seater Blériot Monoplane.

This machine differs very little from the smaller single-seater Blériot, but may be identified—apart from its number, which will be painted in large letters underneath the wings—by the passenger, who can be seen a short distance behind the planes. It is also of slightly larger dimensions than the single-seater machine of the same make.



No. 6.



Pilot :
Mr. W. L. Brock.

No. 7.



Pilot :
Mr. B. C. Hucks.



No. 7. The Two-seater Blériot Monoplane.

Similar to No. 6.

No. 8. The Avro Biplane

is of the tractor type with the engine in front. The fuselage, or body, is covered in throughout its entire length. The main planes have a very pronounced dihedral angle.



No. 8.



Pilot :
Mr. P. Raynham.

No. 9.



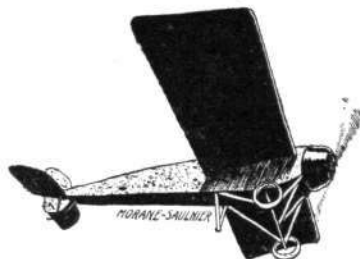
Pilot :
Mr. H. G. Hawker.



No. 9. The Sopwith Biplane resembles the Avro, but has a different landing chassis, as comparison of the accompanying silhouettes will show.

PILOTS AND HOW TO RECOGNISE THE MACHINES.

No. 10.



Pilot:
Mr. P. Marty.



No. 10. The Morane-Saulnier Monoplane.

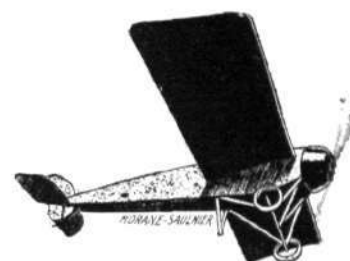
The main planes of this machine are characteristic in that the trailing edge is longer than the leading edge. The landing chassis is not provided with any skids, and the fuselage is covered throughout its entire length.

No. 11. The 80 h.p. Morane-Saulnier Monoplane

This machine differs from No. 10 only in engine power, and the number on the wings will have to be depended upon for purposes of identification.



No. 11.



Pilot:
Mr. Robert B. Slack.

No. 12.



Pilot:
Mr. H. Barnwell.

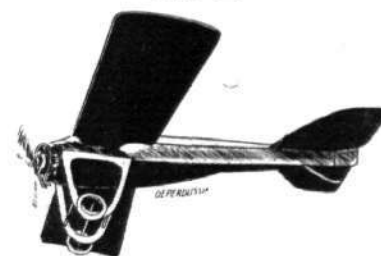
No. 12. The Martinsyde Monoplane

may be recognised by its long narrow fuselage and its tapering wings, which are cut off straight at the tips. Another characteristic feature whereby this machine may be identified is the provision of king-posts on the wings.

No. 13. The Deperdussin Monoplane is peculiar in that the wings are narrower (*i.e.*, have a smaller chord) at the root than at the tips, and should also be easily identified by its characteristic landing chassis.



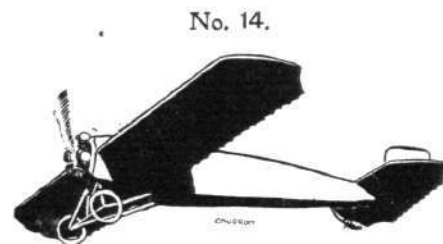
No. 13.



Pilot:
Lieut. J. Porte.

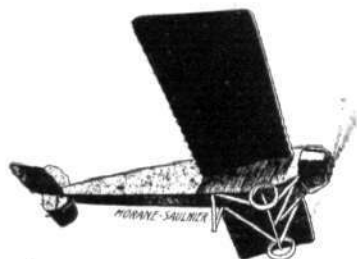
PILOTS AND HOW TO RECOGNISE THE MACHINES.

No. 14. The Caudron Monoplane somewhat resembles the Morane-Saulnier monoplanes, but differs from those machines in several respects. The body is of a different form and the elevator and tail plane is much larger.



No. 14.
Pilot :
Mr. J. Nardini.

No. 15.



Pilot :
Mr. Gustav Hamel.



No. 15. Morane-Saulnier.
Similar to Nos. 10 and 11.

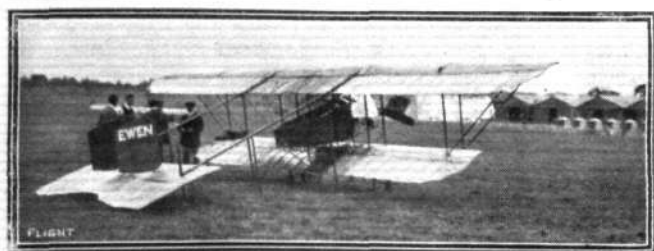
THE MACHINES, WITH SOME DETAILS.



The Grahame-White five-seater.

No. 1. 120 h.p. Austro-Daimler Five-seater Grahame-White Biplane. This biplane is the latest and largest of those built by the Grahame-White Co. Some idea of its size may be gathered from the fact that its maximum span is 62 ft. It is designed to carry four passengers besides the pilot, and has proved itself a remarkably steady and efficient flyer. The pilot sits at the extreme front of the nacelle, and so obtains an excellent and unrestricted view, while the passengers are seated in pairs behind him.

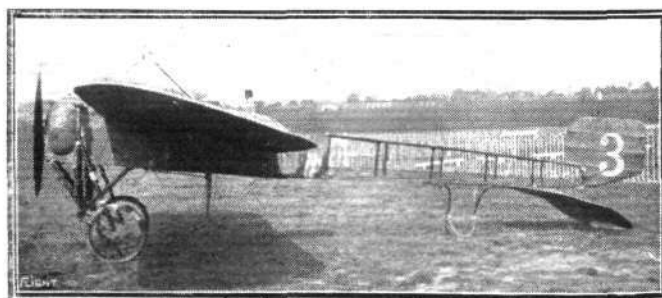
The engine is a 120 h.p. water-cooled Austro-Daimler, with the radiator slung by means of wires over the engine, where the full cooling effect of the draught caused by the machine's flight is felt.



The Caudron biplane.

No. 3. The 60 h.p. Anzani-Caudron biplane is remarkable chiefly for its small size—the span of the upper and lower planes are respectively 30 and 23 ft.—and for the characteristic Caudron flexible trailing edge.

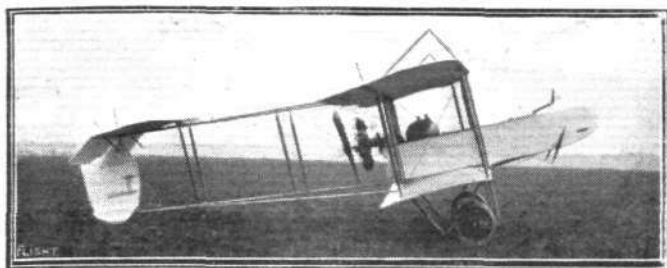
It is a very reliable and steady machine, and its comparatively small initial cost, together with its excellent flying qualities and small size, make it one of the most popular biplanes built.



The single-seater Blériot.

No. 4. The 50 h.p. Gnome-Blériot monoplane is far too well known to need much description here. It is one of the most popular of all monoplanes, and has the characteristic Blériot landing chassis—one of the safest and most ingenious landing gears ever devised.

The flying properties of these machines have been proved on more occasions than could be numbered, while the exploits of the intrepid M. Pegoud on a similar 'bus form a most eloquent testimony to their stability and reliability. There is no provision for a passenger in this model.



The H. Farman.

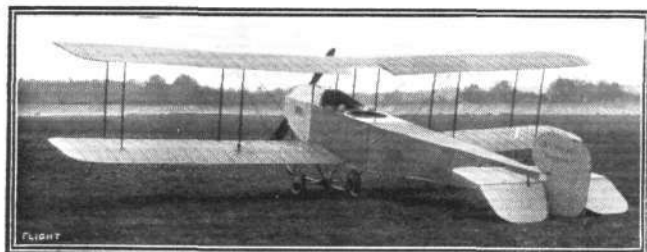
No. 5. The 80 h.p. Gnome-Henry Farman, whose upper and lower planes span 45 ft. and 25 ft. respectively, is somewhat similar to the Maurice Farman, except that it has no front elevator and that the tail is of the monoplane type with its one tail plane level with the upper main plane. It has a single rudder.

The Gnome engine is situated in its usual position behind the passenger's seat, which is, in turn, behind that of the pilot.



The two-seater Blériot.

Nos. 6 and 7. The 80 h.p. Blériot two-seater monoplane is very similar to the 50 h.p. model, as is to be expected. The passenger's seat is situated immediately behind the trailing edge of the planes, while the oil and petrol tanks are found between the pilot and passenger. The wings span 31 ft., and have a supporting surface of 198 square feet.



The Avro.

No. 8. The Avro biplane, fitted with an 80 h.p. Gnome engine, is similar to the usual Avro type, except that the planes are slightly staggered, and that there are minor modifications in the landing chassis. The span of both upper and lower planes is 36 ft.

It is a tractor biplane, and, as is to be expected from the length of experience of its designer and constructor, Mr. A. V. Roe, it is a fast machine, very stable, and thoroughly reliable.



The Sopwith.

No. 9. The 80 h.p. Gnome-Sopwith tractor biplane is somewhat similar to the Avro, and is fitted with an exactly similar engine. It is a very fast machine, and a splendid climber. Mr. Hawker's magnificent flight on a similar machine gave a better idea of its flying properties than could many words. The planes have a distinct dihedral angle, and span 41 ft.

Nos. 10, 11 and 15. The Morane-Saulnier monoplane has leapt into public favour in a remarkable manner during the last few



The Morane-Saulnier.

months; its popularity in England dating, perhaps, from the visit to Hendon of the world-famous Brindejone des Moulinais.

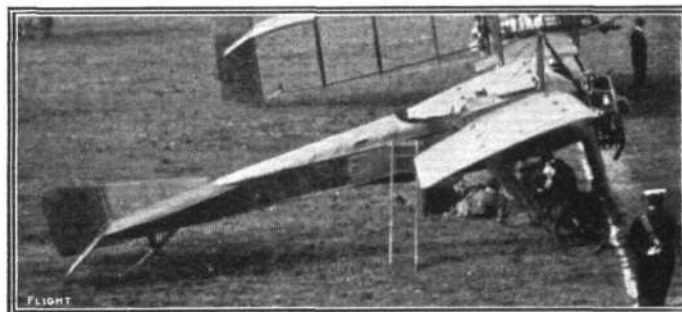
They are very swift monoplanes, their speed varying, of course, with the engine power, from about 75 m.p.h. in the 50 h.p. model to about 85 m.p.h., or even more, in the 80 h.p. model.

The whole machine is quite small—the span is about 30 ft., and there is no dihedral angle. The tail is extremely small, and is characterised by the absence of fixed tail-planes.



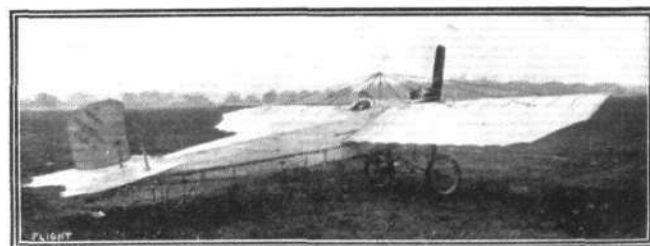
The Martinsyde.

No. 12. The 120 h.p. Austro-Daimler-Martinsyde monoplane. This is also an extremely fast 'bus—its speed being about 80 m.p.h. Built on similar lines to the old Antoinette monoplane, it is a most graceful machine. The water-cooled motor is placed in front of the pilot. The fuselage is of triangular section, with the apex pointing downwards, and is quite slender, though very strongly constructed. It is the only aeroplane entered for the race that has the king-post system of wing bracing.



The Deperdussin.

No. 13. The 110 h.p. Anzani-Deperdussin monoplane—also a fast machine, is of the well-known Dep. type. The wings have a greater chord at the tips than at the roots, so as to give increased warping efficiency. The fixed tail planes are comparatively large, and there is a vertical stabilising fin in front of the rudder.



The Caudron monoplane.

No. 14. The 45 h.p. Anzani-Caudron monoplane.—This is the same monoplane that Mr. Ewen flew over from France early in 1912. It is astonishingly small, and, considering the comparatively low engine power, surprisingly swift. The span is 25 ft. 6 ins., and the wing construction is the same as that employed in the Caudron biplane. It is altogether a startlingly efficient monoplane, its diminutive size and graceful lines tending to conceal its truly wonderful turn for speed: it has attained a speed of 95 m.p.h.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

It is most curious how one remembers things that happened long years ago with ease, and yet has to make some sort of an effort to remember things but of yesterday. I remember quite well spending my holidays at Folkestone, more years ago than I care to think, with my parents. I was told that on a clear day one could see France, and was taken up on to some high point and had the coast-line pointed out to me. I am not quite sure now whether I saw it or not, but I have a dim recollection of gazing out across, to me, that huge waste of water, and thinking what a long way it seemed, and how funny it was that there should be more land right out there.

Another year—or perhaps it was during the same holiday—I was taken to Dover, and shown a cannon that had an inscription on it which I believe ran, "Load me well and keep me clean, I'll carry a ball to Calais Green," and I again looked out over the water and—well, I don't think I believed it. There may have been land out there, land just like our England, but to me, the sea coast on which I was standing was the end of all things so far as land, and towns and little boys were concerned. Later, when I had occasion to cross the "silver streak," it was at the expense of getting up very early in the morning and going quite quickly to the coast, but there the real journey seemed to commence. There was the boat of such great size, needed, I supposed, to enable it to carry one on such a far journey, and the destination arrived at late at night, tired and weary and worn. Surely a great journey, and one not to be undertaken without great forethought and much preparation.

Later came the era of the motor car. I had even heard of people leaving Paris in the morning, motoring to the coast, and arriving in London the same night. Truly France was a long way off. Last Saturday I was at the London Aerodrome, Hendon, watching the racing, when the cry went up that an aeroplane was approaching from without. Many aeroplanes have come in at one time or another from Brooklands or Eastchurch, but this one looked different.

When still two or three miles away it was seen that it was an Etrich, and as there was not one in this country we knew it had come from over the water. It came in at a great height, and making a fine spiral, landed with ease and with no more fuss than a machine just having completed a short flight. It had left Calais at about 4 o'clock, and here it was safe and sound in our familiar Hendon at 5.50 p.m. Two men climbed out, neither of them able to speak a word of English, yet they had come here from foreign parts straight as the crow flies. Let your imagination dwell on this for awhile; let it run riot and carry you to what might happen even in the near future.

Here are two men, who climb into a machine after tea, in a foreign country, for just a little cruise round, and arrive in a strange country, with strange people, and a strange language, in time to see the last of an ordinary afternoon's racing, and could, if they wanted to, without any very great effort go back again to supper. Time was, not so very many years ago, before the days of the telegraph, and daily paper, that a bloody war has been raging in a country, and peasants, a little removed from the immediate scene of action, have gone on with their daily toil and have known nothing whatever about it until months afterwards. I well remember, as a little boy,

when hearing my elders speak of war, feeling quite safe in our little village. Was it not such a very great way from London, and were there not quite forty long miles of railway to be traversed, followed by ten in the carrier's cart, ere reaching that quiet spot so sheltered by the trees?

No invading army could ever find us there. War might rage round our coast, a coast not one in our village had ever seen, or foreign troops might pour into London, but this was too far off, we were quite safe. Since those days that same little village, during our own manoeuvres, has been turned practically inside out. Troops have filled the cottages, guns have stood on the village green where once a year was the excitement of the fair, the only excitement of the year, with the exception of the choir supper in the schoolroom at Christmas.

The flagged floor of the "George," the only inn, has rung to the spurs of the trooper, and on one occasion, I believe, the old 11th century church, with its short, squat steeple and small, diamond-shaped leaded windows, has held a "church parade."

Troopers' horses have stood in dozens outside the forge at the end of the little street of about twelve cottages; under the great elm tree, from a bough of which I once fell, almost on top of the Vicar! and where the kindly giant of a smith used to weld our broken hoops for a penny, what time we, a round dozen of us, would blow the red cinders up in clouds, by means of the long handle of the bellows, with the cow's horn on the end of it, and, as he used to say, spoil his fire, so that he used to have to scoop water on it with an iron ladle. A thing I could never understand.

"Tommies" have hidden, and fired their blank cartridges from behind the very tree (one of many) on which I, working with the labour of love and a blunt knife, carved two hearts and my own and somebody else's initials (I forget who's now; I carved most trees in those days), and have drawn water for their horses from the well, down which I once fell, through entering into a competition with other boys as to who could drop a stone into the water without first touching the side. I do not remember going down, but I distinctly remember lying on the grass afterwards, looking up into the faces of the entire village. I don't know to this day, who my rescuer was, but I sometimes wonder whether it would not have been as well to—

All these thoughts generated by the simple arrival of a monoplane from "over there." But does it not give one to wonder? Things have, and are altering in these days. Time may come when, not the arrival of one, but many machines, may, as has been said, give us "furiously to think," but we may then be too late to do anything but think. The time has come; it is not coming, but has come, when the aeroplane, in the time of war, must be reckoned with. Only to-night I have read of some little mishap to some troops crossing the Thames by a "sapper" built bridge, who had trouble with their horses taking fright in the middle, during which time the "enemy's" aeroplanes circled overhead, at an altitude of three thousand feet, "taking it all in."

I suppose that some day, the powers that be will wake up and leave off dreaming, which dreaming can at the moment be well left to "The Dreamer" if only for the fact that he is the one most likely to do least harm.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held here on Tuesday last, the 16th inst., when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. Ernest C. Bucknall, Col. J. E. Capper, C.B., R.E., Mr. G. B. Cockburn, Prof. A. K. Huntington, Mr. Mervyn O'Gorman, C.B., Mr. C. F. Pollock, Mr. A. Mortimer Singer, Mr. T. O. M. Sopwith, and the Secretary.

New Members.—The following new Members were elected:—William Spencer Crabtree, Gordon Davson, Capt. Francis Ferguson, R.E., C. E. P. Long, James Welby Madeley, and Richard Crofts Powell.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

- 615 2nd Lieut. Howard Bertie Strong (Queen's Royal West Surrey Regt.) (Bristol Biplane, Bristol School, Brooklands). Sept. 3rd, 1913.
- 616 John William Wilfred Slack (Wright Biplane, Beattie School, Hendon). Sept. 8th, 1913.
- 617 Vivian Gaskell Blackburn (Bristol Biplane, Bristol School, Brooklands). Sept. 10th, 1913.
- 618 Walter Hugh Stewart Garnett (Bristol Monoplane, Bristol School, Salisbury Plain). Sept. 10th, 1913.
- 619 2nd Lieut. Lambert Playfair (Royal Scots) (E.A.C. Biplane, Eastbourne Aviation School, Eastbourne). Sept. 11th, 1913.
- 620 Lieut. Neville Morris Jenkins, R.A. (Bristol Biplane, Bristol School, Salisbury Plain). Sept. 11th, 1913.
- 621 Lieut. Hyacinth Joseph Albert Roche (Royal Munster Fusiliers) (Bristol Biplane, Bristol School, Brooklands). Sept. 12th, 1913.
- 622 Capt. Arthur James Ellis (South Wales Borderers) (Vickers Biplane, Vickers School, Brooklands). Sept. 12th, 1913.
- 623 Lieut. Jack Armand Cunningham, R.F.A. (Bristol Biplane, Bristol School, Brooklands). Sept. 12th, 1913.
- 624 Cecil Le de Spencer Wynne Roberts (Vickers Biplane, Vickers School, Brooklands). Sept. 12th, 1913.
- 625 Francis Knox Haskins, R.N. (Vickers Biplane, Vickers School, Brooklands). Sept. 13th, 1913.
- 626 Colin Layzell-Apps (Vickers Biplane, Vickers School, Brooklands). Sept. 13th, 1913.

The following Certificate was passed in France:—

Harold Larpent Woodcock.

The following Hydro-aeroplane Certificate was passed in America:—

Ernest C. Bass.

Accidents Investigation Committee.—On the motion of Col. H. C. L. Holden, the report on the fatal accident to Mr. S. F. Cody and Mr. W. H. B. Evans was unanimously adopted.

(Full report will be found following these notices.)

Competitions Committee.

A meeting of the Competitions Committee was held here on Tuesday last, the 16th inst., when there were present: Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Major F. Lindsay Lloyd, Mr. E. V. Sassoon, Mr. A. Mortimer Singer, and the Secretary.

British Empire Michelin Competition No. 1.—The conditions for this Competition were altered, and appear in these notices.

Paris-London Race.—Correspondence with the International Correspondence Schools and the Aero-Club de France was considered. The suggestion of the Aero-Club de France that the race should be from London to Paris and back was agreed to.

In addition to the £700 deposited by the International Correspondence Schools, the Aero-Club de France proposes to offer prizes up to £600. The regulations will be drawn up by representatives of the Royal Aero Club and the Aero-Club de France and it is hoped the race will take place in the month of October, starting and finishing at the London Aerodrome, Hendon.

British Empire Michelin Cup No. 1, £500.

The flights in connection with this Competition were, in the original rules, set down for certain dates, the closing date being Thursday last, the 18th inst. As no flights had been recorded on

that date, the Committee of the Royal Aero Club, with the consent of the Michelin Tyre Company, has decided to extend the Competition to October 31st, 1913, and flights may be made on any day up to that time. It has also been decided to make a slight alteration in the course, Farnborough being left out. The course is now confined to Brooklands and Hendon, and the following conditions stand:—

The Michelin Tyre Company has presented to the Royal Aero Club of the United Kingdom, for competition by British aviators, a trophy of the total value of £500.

Annually, for five years, a replica of this trophy, together with a sum of £500 in cash, will be given to the successful competitor. This trophy will be competed for under the following conditions:—

CONDITIONS.

1. The winner for the year 1913 shall be the competitor who shall have accomplished the longest distance on an aeroplane in flight round the course, Brooklands, Hendon, Farnborough, on any day up to October 31st, 1913.
2. Flights shall be made between 7 a.m. and one hour after sunset.
3. No replenishments of oil, fuel, etc., will be permitted.
4. No repairs may be carried out after a start has been made.
5. Competitors shall make periodical compulsory stops of not less than five minutes, with engine stopped, on completing an entire circuit of the course plus one section, e.g., starting from Brooklands the competitor would pass Hendon, Brooklands, and alight at Hendon. His next flight would be from Hendon, passing Brooklands, Hendon and alighting at Brooklands, and so on.
6. Landing at any point other than a proper landing place terminates a flight, and the competitor will then be credited with the mileage of the sections which he has completed, in conformity with the regulations.
7. A minimum distance of 300 miles must be accomplished.
8. Starts may be made from any of the two points of the course.
9. The entrant, who must be the person operating the machine, must be a British subject, flying on a British-made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitors' Register of the Royal Aero Club.
10. The complete machine, and all its parts, must have been entirely constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material.
11. An entrance fee of £1 must accompany every notification of an attempt, and at least three clear days' notice must be given to the Secretary, Royal Aero Club, 166, Piccadilly, London, W. A competitor must further deposit a sum of £10 on account of expenses, if any, of officials. Any balance not so expended will be returned to the competitor.
12. Should any questions arise at any time after the date of entry as to whether a competitor has properly fulfilled the above conditions, or should any other question arise in relation to them, the decision of the Royal Aero Club shall be final and without appeal.
13. A competitor by entering waives any right of action against the Royal Aero Club or the Michelin Tyre Co. for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or the Michelin Tyre Co., or their representatives or servants, or any fellow competitor.
14. The aeroplane shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself or his aeroplane, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club and the Michelin Tyre Co. in respect thereof.
15. The Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

The Gordon-Bennett Balloon Race.

The Gordon-Bennett Balloon Race will take place in Paris on Sunday, October 12th, 1913, and the representatives of Great Britain will be Mr. John Dunville and Mr. Jean de Francia. On the Saturday previous to the race, the delegates from the various countries will visit the various aerodromes around Paris.

Members of the Royal Aero Club wishing to visit Paris for the race are requested to send their names to the Secretary.

166, Piccadilly, W.

HAROLD E. PERRIN, Secretary.

ACCIDENTS INVESTIGATION COMMITTEE OF THE ROYAL AERO CLUB. REPORT No. 17.

REPORT ON THE FATAL ACCIDENT TO MR. S. F. CODY AND MR. W. H. B. EVANS WHEN FLYING AT FARNBOROUGH ON THURSDAY, AUGUST 7TH, 1913, AT ABOUT 10.30 A.M.

Brief Description of the Accident.—Mr. S. F. Cody was flying a Cody biplane fitted with a 100 h.p. Green motor, with Mr. W. H. B. Evans as a passenger, on Thursday, August 7th, 1913, at about 10.30 a.m., at Farnborough. The flight was made from Laffan's Plain, over Farnborough, Bramshot and Cove, and after being in the air for about 8 minutes the aircraft was descending as if to alight on Laffan's Plain. At a height of 200 feet the aircraft buckled up and fell headlong, the pilot and passenger being thrown out in mid-air, striking the ground some 30 yards distant from the spot where the aircraft fell. Both the pilot and passenger were killed, and the aircraft, which fell through some trees, was wrecked.

Mr. S. F. Cody was granted his Aviator's Certificate No. 9 on June 7th, 1910, by the Royal Aero Club.

Report.—The representatives of the Accidents Committee visited the scene of the accident within a few hours of its occurrence, and made a careful examination of the wrecked aircraft. Evidence was also taken from the eye-witnesses of the accident.

The Committee sat on Tuesday, September 9th, 1913, and received the report of the Club's representatives.

From the consideration of the evidence, the Committee regards the following facts as clearly established:—

1. The aircraft was built at Farnborough by Mr. S. F. Cody in July, 1913.

2. It was a new type, designed for the *Daily Mail* Hydro-aeroplane Race round Great Britain, but at the time of the accident had a land chassis instead of floats.

3. The wind at the time of the accident was about 10 m.p.h.

4. At about 200 feet from the ground, the aircraft buckled up and fell to the ground. A large piece of the lower left wing, comprising the whole of the front spar between the fuselage and the first upright, was picked up at least 100 yards from the spot where the aircraft struck the ground.

5. The fall of the aircraft was broken considerably by the trees, to such an extent that the portion of the fuselage surrounding the seats was practically undamaged.

6. Neither the pilot nor passenger was strapped in.

Opinion.—The Committee is of opinion that the failure of the aircraft was due to inherent structural weakness.

Since that portion of the aircraft in which the pilot and passenger were seated was undamaged, it is conceivable their lives might have been saved had they been strapped in.

Royal Aero Club,

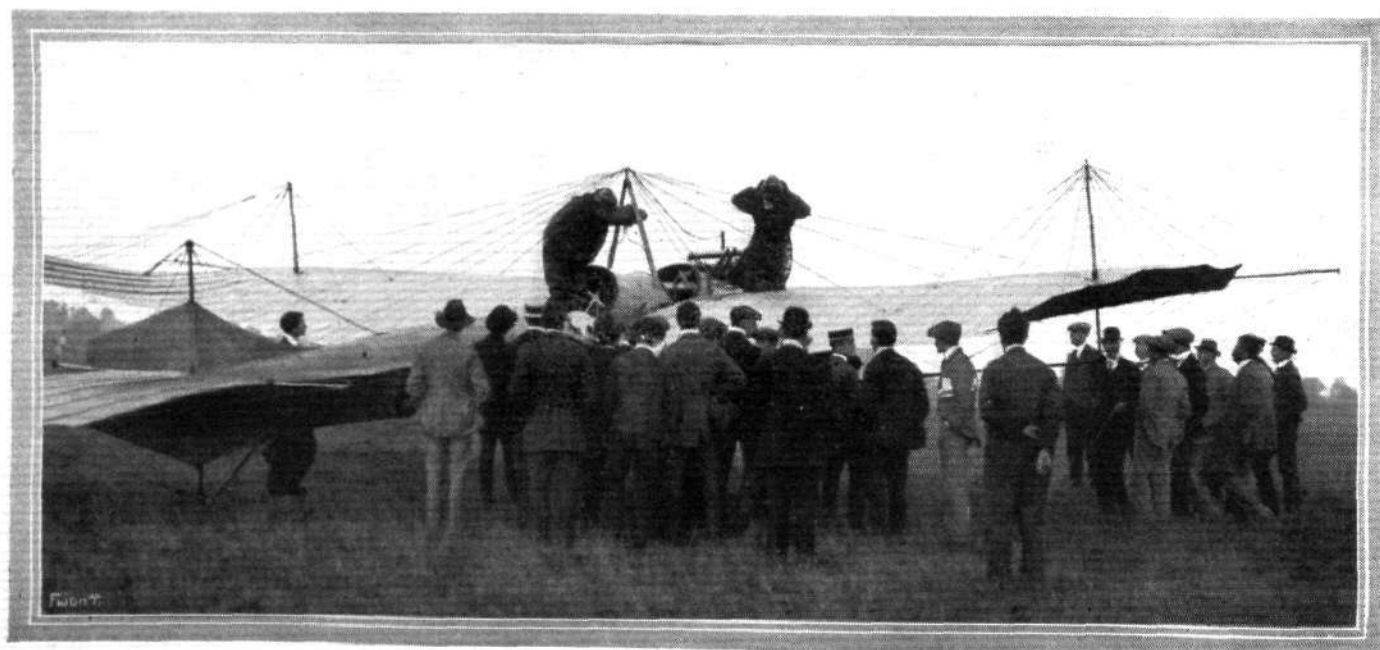
166, Piccadilly, London, W.

September 16th, 1913.

FLYING AT HENDON.

THE enclosures were well filled last Saturday, on the occasion of the Autumn Meeting, many people having returned to town from the holidays. A 20 m.p.h. breeze was blowing early in the afternoon, but later in the evening it was quite calm. Two exciting contests took place—a speed handicap and a cross-country handicap—the latter being substituted for the altitude contest originally down on the programme. A trio of Grahame-White biplanes, piloted by W. Birchenough, R. H. Carr and Marcus D. Manton, opened the proceedings at 2.40 p.m. Manton ascended to several hundred feet and then returned to earth by way of several right- and left-hand spirals. W. L. Brock, now an active member of the Grahame-White colony, next came out on the 80 h.p. "G.-W." Blériot, which formerly belonged to Gustav Hamel. Brock appeared to be as much at home on his new mount as on the "Dep."; he says the Blériot seems to be very slow after the "Dep."—the 110 h.p., of course. Brock was followed by Philippe Marty, on the 50 h.p. Rhone-Morane-Saulnier, and shortly after Robert Slack brought out the 80 h.p. Morane-Saulnier. The next pilot to come out was Pierre Verrier, on the Aircraft Co.'s Maurice Farman. These pilots made several flights prior to the start of the Speed Handicap, Brock, Manton and Verrier taking passengers. The Speed

Handicap was flown in two heats of six laps each and a final of eight laps, and there were four starters in each heat. Those in the first heat were R. H. Carr (4 mins. 29 secs.) and Marcus D. Manton (3 mins. 57 secs.) on 50 h.p. "G.-W." biplanes—Manton flying the new 'bus—Pierre Verrier (2 mins. 3. secs.) on the 70 h.p. Aircraft Co.'s Maurice Farman, and Philippe Marty (scratch) on the 50 h.p. Morane-Saulnier. Carr kept ahead until near the end, Manton and Verrier slowly but surely gaining on him all the time. On the last lap all four machines placed themselves in exactly the reverse order in which they started, viz.: 1st, Marty; 2nd, Verrier; 3rd, Manton, and 4th, Carr. Manton not being placed in the final, Louis Noel took over the 50 h.p. "G.-W." 'bus in the second heat. Birchenough on an old type "G.-W." 'bus was the limit man (5 mins. 28 secs.), Noel received 4 mins. 57 secs., and W. L. Brock on the 80 h.p. Blériot got 49 secs. from R. Slack (scratch) on the 80 h.p. Morane-Saulnier. Noel obtained the lead from Birchenough during the third lap, and retained this position for the rest of the heat. Brock, however, was rapidly catching up, and crossed the line only eight seconds behind Noel, Slack, whose engine was running very badly, coming in third, seven seconds after Brock. The final heat resulted in a magnificent finish, all four

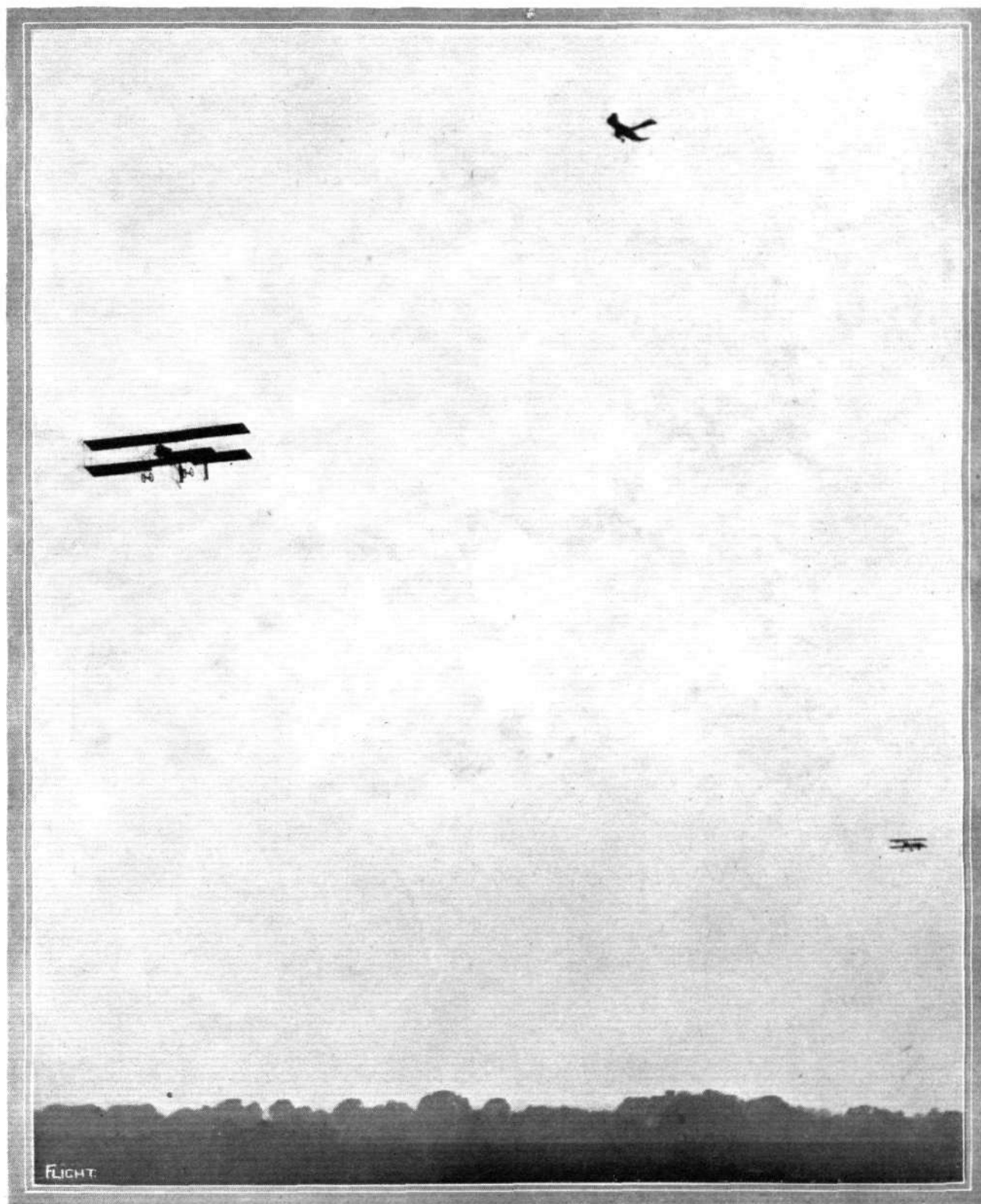


A STRANGER WITHIN OUR GATES.—The gathering of the pilots and others immediately after the arrival from France of the Etrich monoplane at Hendon on Saturday.

"Flight" Copyright.

crossing the line within four seconds. The limit man, Noel, (5 mins. 45 secs.) kept in front the whole time, with Verrier (2 mins. 29 secs.) gradually lessening the distance between them, which was merely a matter of feet when crossing the line—Verrier being one second behind. Marty, who started from scratch, obtained third place from Brock (49 secs.) by one second, being two seconds behind Verrier. Noel piloted the "G.-W." bus in fine style both in the second heat and the final, waving his hand to us each time he passed No. 1 pylon. After the final heat E. Baumann made a high flight on the 60 h.p. Caudron biplane, and further passenger flights were put up by Brock, Manton and Verrier.

J. L. Hall also came out on his 35 h.p. Caudron. Seven pilots brought their machines to the starting line for the cross-country handicap over the four-lap Bittacy Hill course. These were:—W. Birchenough (12 mins. 55 secs.), R. H. Carr (11 mins. 55 secs), Marcus D. Manton (10 mins. 56 secs.), all on "G.-W." biplanes; Pierre Verrier (5 mins.), 70 h.p. Maurice Farman; W. L. Brock and passenger (2 mins. 30 secs.), 80 h.p. Blériot; Philippe Marty (1 min.) and R. Slack (scratch), on 50 h.p. and 80 h.p. Morane-Saulniers respectively. During the first two laps the three "G.-W." biplanes kept together in a cluster, Birchenough and Carr "ding-donging" in a most amusing manner. Manton eventually



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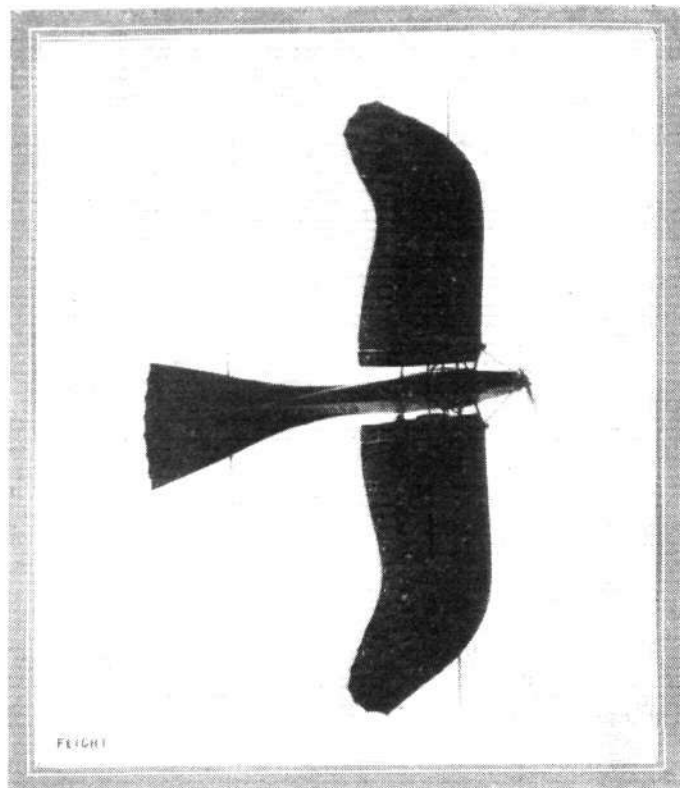
AT HENDON AERODROME.—Arrival of the Etrich-Taube monoplane at Hendon during the progress of a race on Saturday.

broke away from the other two, and obtained the lead, which he retained throughout the rest of the race.

After two laps had been completed all attention was transferred from the cross-country race to a bird-like machine approaching the aerodrome from the south some 3,000 ft. up. When above the aerodrome the machine was easily recognised as an Etrich, with its dove-like wings and fan-shape tail. The pilot made a beautiful spiral descent, banking well over 60°, just as some of the cross-country competitors were entering the aerodrome. It was a very impressive sight, for the Etrich is certainly one of the prettiest monoplanes extant. The monoplane came to rest close to No. 1 pylon, and was immediately surrounded by a crowd thirsting for information. When the passenger—for there were two on board—removed his goggles, we recognised in him Herr I. Etrich, the designer of the much admired monoplane. The pilot was Alfred Friedrich. With the help of E. Baumann, who acted as interpreter, we ascertained that the aviators had left Paris at 11.20 that morning, arriving at Calais at 1.55, where a stay of 1½ hours was made. The remainder of the journey to Hendon was made without a stop in 2 hours 5 mins., flying at an altitude of about 4,500 ft., and encountering very rough weather. Having found out all about our visitors, we turned our attention to the neglected cross-country race, which had by then finished.

Anyhow, the result was kindly furnished by Mr. Reynolds, the timekeeper, as follows: Marcus D. Manton first, in 25 mins. 23 secs.; P. Verrier second, in 25 mins. 30 secs.; W. L. Brock third, in 25 mins. 48 secs. Manton thus won his first race on the eve of his twentieth birthday, and we wish this clever young pilot many further successes to come.

In spite of the very high wind on Sunday afternoon several of the Hendon pilots ventured out and put up some fine exhibition and passenger flights. The star turns of the afternoon, however, were the splendid displays by Gustav Hamel on the 80 h.p. Blériot and Igo Etrich on the Etrich-dove monoplane. The former indulged in a cloud-hunt lasting over an hour. It was a performance strange to behold; he made for cloud after cloud, turning again and again, only to find the clouds still above him. Eventually he saw a large one, which he made for and passed over the top. Having accomplished this feat he descended, as he was running short of oil. He was stiff with cold when he alighted, and the barograph recorded a height of 9,500 ft. The flights of the Etrich monoplane were very



"Flight" Copyright.

A plan view of the Etrich monoplane as seen from beneath.

picturesque, the pilot executing some remarkable highly banked spirals.



HERR FRIEDRICH FLIES TO LONDON.

FOLLOWING on his flight from Berlin to Paris, recorded in last week's issue, Herr Friedrich, on Saturday morning last at 11.20, accompanied by Herr Igo Etrich, on the Etrich-Taube with Chauvière propeller, left Issy for London by way of the air. At Calais he descended at 1.55, where he was delayed somewhat in connection with some of the official requirements, so that he was not able to continue his flight until 3.45. At that hour he was away again, arriving at Hendon aerodrome, after a magnificent flight, in the middle of one of the speed races, at 5.50, his altitude being about a thousand metres during most of the trip. Directly it was recognised who the voyagers were, they were very hospitably treated, and during the afternoon Herr Friedrich gave some exhibitions of his flying on the Etrich-Taube. On Wednesday this week, Friedrich was due to leave England again, this time taking as passenger Mr. John Rozendaal, the managing director of the Etrich Co. It is proposed to cross the Channel to Calais, and then fly direct for Utrecht, Holland, before returning to Germany. Mr. Rozendaal has from the earliest days been associated with aviation, he having been in Germany connected with the Wright machines before taking up the Etrich monoplane. It was Mr. Rozendaal also who engineered the late Mr. Latham's flight in Berlin from the Tempelhofer Feld to Johannisthal in 1909.



Pegoud to Fly at Brooklands.

NEXT week, Thursday, Friday and Saturday, it is proposed that Pegoud should repeat his sensational flights at Brooklands. There is likely to be a big crush at the aerodrome.

Flying at Shoreham.

THE early part of last week saw a good deal of flying by Mr. Cecil Pashley on his H. Farman 'bus, and many passengers enjoyed their initial trip. Mr. Pashley's brother underwent an operation, and is now progressing fairly well. It will be some time, however, before he will be flying again, as the fracture he sustained was unfortunately of a serious nature. Mr. Elliot and Mr. B. H. England have been busy on their new 'bus, the former being out on Monday last in moonlight. It is interesting to note that Mr. J. W. Smith, of propeller fame, is building an unique machine, which will be out very shortly for trials.



"Flight" Copyright.

THE ETRICH MONOPLANE AT HENDON.—From left to right: Herr Friedrich (pilot) Mr. Claude Grahame-White and Herr Igo Etrich.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

No one could possibly accuse the Naval Wing of the Royal Flying Corps at Eastchurch of "slacking," whenever there is the smallest chance. Not satisfied with the ordinary work of the day, Commander Samson must needs fly at night. On two occasions last week, Thursday and Friday respectively, he indulged in extended flights in the moonlight, on the Friday flying over to Sheerness, naturally causing some little excitement.

Commander Samson of late has developed into a superlatively first-class pilot, though not by any means suggesting that he was not a good flyer previously, but he seems to have attained such a brilliancy that is new to anyone who has closely followed his work, and to see him perform his wonderful gyrations on Short No. 3 is a revelation.

Altogether, the R.F.C. at Eastchurch seem to be well organised, and the E.R.A.'s are thoroughly at home with the various engines that pass through their hands, although some of the seamen appear to be rather crude and rough in their handling of the machines, they can be classed as an exceedingly useful lot of men.

An interesting recruit to the ranks of the private owners at Eastchurch is Mr. Sydney Pickles, who has brought with him a two-seater Radley-Moorhouse Blériot, with a 60 h.p. Anzani engine. This machine has seen good service, and at the recent Burton-on-Trent meeting Mr. Pickles ascended to over 9,000 ft., thus winning the altitude prize from Mr. Raynham on an Avro. It also took quite a number of passengers. Included in its adventurous career is the charging of a chimney at Dundee, which no doubt most of our readers will remember. Mr. Pickles has completely overhauled her, and is fitting a new system of control in preference to the Blériot cloche.

Mr. Ogilvie was very busy last week with his N.E.C.-engined Wright, and his passengers included Mrs. Pickles, mother of Mr. Sydney Pickles; Miss Booth, a sister of Mr. Harris Booth; Mr. Ogilvie's manager, and Mr. Frank Dunne, a brother of Mr. J. W. Dunne.

We are awaiting with great eagerness the advent of Mr. Ogilvie's new Wright, which is fitted with an American Wright engine. This machine has several interesting features, and the construction leaves nothing to be desired.

Messrs. Short Bros., who are very busy at the present time, are turning out three machines in the near future, one of which is a 160 h.p. Gnome-engined seaplane, of a similar design to the machine already in use by the Admiralty.

The Blair Atholl Aeroplane Syndicate, Ltd., who hold the sole manufacturing rights of the "Danne Safety Aeroplane," have two biplanes nearing completion, one at Eastchurch and the other at their Hendon branch.

By way of summary all the undermentioned Naval pilots have done considerable flying during last week-end:—Commander

Samson, R.N., Lieut. Davis, R.N., Capt. Lushington, R.M.L.I., Sub.-Lieuts. Marix and Littleton, Paymaster Parker, Lieuts. Osmond and Miley, &c., the machines including Shorts, Blériot, Deperdussins, Avro and Sopwith.

Brooklands Aerodrome.

On Monday, last week, Mr. Hawker left for Eastchurch and arrived there in 56 mins., notwithstanding a strong head wind. His machine was a Sopwith tractor biplane (80 h.p. Gnome), on which, with full load and passenger he climbed to an altitude of 3,200 ft. in 7 mins. 15 secs.—an excellent performance, and the best yet achieved by him in a test. Mr. Ronald Kemp arrived on a B.E. biplane, on which he carried out some fine evolutions.

On Thursday, Lieut. Lawrence R.F.C., on a B.E. biplane came with a passenger. Mr. Barnwell was further testing the Martinsyde waterplane, on which he made some good circuits.

On Friday, Lieut. Lawrence, R.F.C., paid another visit on a B.E. machine with a passenger.

On Saturday, Mr. Ronald Kemp again visited Brooklands on a B.E. biplane, over which he seemed to have remarkable control. Mr. Raynham, on the Avro biplane, was first out in the afternoon. Mr. Alcock was testing the Parsons biplane. Mr. Merriam made some good exhibition flights with and without pupils on the Bristol biplanes. Mr. Barnwell made some excellent flights on the Martinsyde waterplane, the machine climbing quickly and flying most steadily, its ease of control being particularly noticeable. Mr. Barnwell and Mr. Alcock respectively tested Mr. Ducrocq's racing Farman biplane.

The wind was blowing up to 30 miles an hour on Sunday afternoon, but gradually died away towards sunset. Some fine flying was witnessed, a large number of people staying until quite a late hour. Mr. Hawker was first out on the Sopwith tractor, on which he gave some exhibition flights, with and without passengers. Mr. Barnwell was next out on the Martinsyde waterplane, on which after an excellent test flight he had an impromptu race with Mr. Hawker on the Sopwith tractor, in which the superior pace of the Martinsyde machine was clearly demonstrated. Mr. Merriam gave some of his famous spiral descents, and was also busy with pupils, with one of whom he had an exceedingly narrow escape, as the propeller suddenly burst when the machine was 50 feet up, breaking the elevator controls, and damaging one of the ailerons. The pupil had charge of the machine, but Mr. Merriam with commendable promptitude at once seized the control and effected a rough though safe landing. The winner of the ballot for the free passenger flight, Mr. J. Gillett, Jun., of Maddox Park, Little Bookham, was taken up by Mr. Barnwell on the Vickers biplane, at the end of which a very fine spiral descent was effected.

Bristol School.—Monday, last week, Skene early test, with Lieut. Cuninghame. Merriam behind Lieut. Cuninghame on straights and circuits. Mr. Alford good solo. Merriam again as



Lieut. J. A. Cuninghame,
R.F.A.

Lieut. H. B. Strong,
Queen's Royal West Surrey.

Lieut. H. J. A. Roche,
Royal Munster Fusiliers.

Some more Bristol pilots who have all recently taken in very fine style their *brevets* at the Bristol School, Brooklands. Lieut. Cuninghame secured his after having only five days' tuition, and Lieut. Strong went for his test in a stiff breeze.

passenger to Lieut. Cunningham. Wind stopped further work. Merriam test in afternoon, then with Lieuts. Cunningham and Hinds. Lieut. Roche flew good circuits, landing well. Merriam with Mr. Alford flew over airship approaching near Weybridge. Later giving Lieut. Cunningham instruction.

No flying Tuesday in the morning, weather bad. Skene test in the afternoon, then tuition with Lieut. Hinds. Merriam behind Lieut. Cunningham. Mr. Alford three good circuits, landing with well judged *vol plané*.

Lieut. Cunningham taken for test Wednesday by Merriam for several circuits, later Merriam with Lieut. Cunningham. Later pupil away for first solo, making a circuit in excellent style, landing well. Good solo by Mr. Alford, figures of eight, *vol plané* landing. Mr. Gaskell Blackburn for landing practice for *brevet* tests, Merriam taking up new machine just up from the Filton works. Merriam with Mr. Alford to 3,000 ft. over Chertsey and back, gliding to hangars.

In the evening Merriam tested conditions, Skene following on another machine. Mr. Gaskell Blackburn passed his certificate tests in capital style, landing on the mark every time. Lieuts. Roche and Cunningham for straights and circuits, Merriam giving a trip to Lieut. Ames and Mortimer Griffin, and then testing new machine. Skene with Lieut. Hinds.

Usual test, Thursday, by Merriam. Lieut. Roche good circuits and figures of eight. Lieut. Cunningham also good figures of eight. Merriam behind Lieut. Hinds twice and once with Mr. Boger.



Capt. B. D. Fisher, who took his Royal Aero Club certificate at the Bristol School, Brooklands, under a fortnight.

Lieut. Cunningham very fine solo with figures of eight and good banked turns. Mr. Alford figures of eight in first-class style. Lieut. Cunningham another solo, and then Merriam finished with a solo to the sheds. Merriam made a trial in the evening, afterwards with Lieuts. Ames, Hands and Mr. Boger, and with Lieut. Rose. Mr. Alford for circuits, Lieuts. Roche and Cunningham figures of eight, latter pupils making three solos each. Merriam finished with a solo to sheds.

Friday, Skene first out, after which Lieut. Roche carried out his tests splendidly, as also did Lieut. Cunningham, both pupils giving great credit to the instructors. Skene tuition to Mr. Boger. After wind dropped, Merriam for test in the evening and with Mr. Boger.

Skene test Saturday, afterwards tuition to Mr. Boger. Mr. Alford circuits and good *vol plané* landings. Weather too bad for further work. Merriam for test, when he attained 1,500 feet with pupil, and a trip to Lieut. Robertson. Wind prevented further work.

Vickers School.—Monday morning, last week, Knight test, biplane 20, then with Messrs. Sherlock, Haskins, Addis and Wynne Roberts. Capt. Ellis, Mr. Apps, and Mr. Wynne Roberts solos. Paterson test, No. 3 mono., Lieut. Styles straights. Paterson test, No. 5 mono., Messrs. Elsdon and Newton-Clare solos. Barnwell solo. Paterson on biplane 21 with Messrs. Howell and Haskins. In evening, Knight test, biplane 20, then with Messrs. Addis, Haskins and Sherlock. Messrs. Ellis, Apps and Wynne Roberts solos. Paterson test, No. 3 mono., Lieut. Styles straights. Mr. Joubert de la Ferte straights. Barnwell on biplane 20 with Mr. Howell.

In morning, Tuesday, Knight on biplane 20 with Messrs. Sherlock, Haskins, Addis and Howell. Messrs. Ellis, Apps and Wynne Roberts solos. Barnwell test No. 5 mono., Messrs. Elsdon and Newton-Clare solos. Barnwell on biplane 21 solo, and with Messrs. Howell, Sherlock, Addis, Apps and Wynne Roberts.

Knight, Paterson, Mr. Webb and Mr. Morgan (new pupil) on No. 3 mono., Messrs. Paterson and Barnwell on No. 5 mono.

Wednesday morning, Barnwell on biplane 20, solo, and with Messrs. Addis, Haskins, Ellis, Apps, and Howell. Knight with Messrs. Howell, Sherlock, and Addis. Capt. Ellis solo. Knight on No. 5 mono. Mr. Elsdon solo. Mr. Morgan on No. 2 mono. getting on very well. Mr. Webb straights on No. 2 mono. In evening, Barnwell testing propeller on biplane 20, then with Mr. Sherlock. Knight on No. 2 mono., then Mr. Webb straights. Barnwell on biplane 21, with Mr. Wynne Roberts and Mr. Sherlock. Knight with Mr. Haskins and Capt. Ellis. Knight on biplane 20 with Mr. Howell and Mr. Addis.

Barnwell Thursday morning on biplane 20, solo, and with Mr. Haskins, Mr. Apps, Mr. Addis, and Mr. Wynne Roberts solos. Paterson test, No. 2 mono., Lieut. Styles straights. Knight on biplane 20 with Mr. Howell, Mr. Addis and Mr. Sherlock. In the evening Barnwell on biplane 21 with passengers. Knight test on No. 3 mono. Mr. Joubert de la Ferte straights, Lieut. Styles straights. Knight test No. 5 mono. Mr. Newton-Clare and Mr. Elsdon solos. Capt. Ellis, Mr. Apps, and Mr. Wynne Roberts, and Mr. Haskins solos on biplane 20.

In morning, Friday, Knight on biplane 20, solo, and with Mr. Sherlock, Capt. Ellis, and Mr. Wynne Roberts both took their *brevets* in good style on biplane 20. Mr. Haskins solo. Paterson, Barnwell and Mr. Newton-Clare solos on No. 5 mono. In evening Knight on biplane 20, solo, and with Mr. Sherlock. Messrs. Haskins and Apps solos, circuits. Barnwell on biplane 21 with passengers.

Saturday morning, Paterson test on biplane 20. Mr. Haskins and Mr. Apps, then went for their *brevets*, both finishing up with good *vol plané* right on to mark on each occasion. Barnwell test No. 5 mono. Mr. Elsdon and Mr. Newton-Clare solos circuits. Mr. Addis, and Mr. Sherlock solo straights on biplane 20. Knight, with Mr. Sherlock, Mr. Barnwell testing Blériot monoplane.

Liverpool Aviation School, Waterloo.

THURSDAY, last week, Melly flew round Liverpool and Birkenhead on his two-seater Blériot, crossing the Mersey twice, at an average height of 1,500 ft., being 44 mins., total distance about 32 miles; a strong north-west wind prevailed.

Hardman and Melly both cut in turn Saturday on Y-Anzani, doing figures of eight; and on Tuesday, this week, Melly out on two-seater, first by himself, and then with Mr. W. Topham; afterwards, another flight by himself. Hardman then took out Y-Anzani, doing a series of figures of eight.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Sunday, last week, Mr. Davis and Mr. Tamplin (new pupil) rolling with Mr. Manton. Mr. Carpenter straights on Monday with Mr. Manton.

Tuesday, Mr. Blake and Mr. Carpenter straights with Mr. Birchenough. Mr. Draper straights and circuits. Messrs. Tamplin and Davis rolling alone, afterwards taking flights with Mr. Birchenough.

Wednesday, Mr. Draper, Messrs. Blake, Strange, Carpenter, Hart-Davis straights, with Instructor Manton behind. Mr. J. M. R. Cripps and Mr. L. C. Kidd (new pupils) first instructional flights with Mr. Manton.

Mr. Draper straights and circuits, Thursday. Messrs. Blake, Strange, Hart-Davis, Carpenter straights under supervision of Mr. Birchenough. Messrs. J. M. Cripps and L. C. Kidd rolling alone, afterwards straights with instructor.

Friday, Messrs. Draper, Cripps, Kidd, Hart-Davis, Blake,



Mr. Gaskell Blackburn, another Bristol School pilot, who has just secured his *brevet*.

Strange and Carpenter straights under supervision of Instructor Manton.

W. H. Ewen School.—It was too windy on Monday, last week, for school work, but M. Baumann was up on the *brevet* machine.

The pupils were out at 5.40 a.m. on Tuesday under the instruction of M. Baumann. After test flight on 35 h.p. Caudron No. 1, Lieut. Bewes made flight on same machine. Mr. Watts was doing circuits and figures of eight and Capt. Jennings half-circuits, landing well. Mr. Goodden made a flight on same machine. On Caudron No. 2, M. Baumann gave Mr. M. E. H. Scott his first instruction.

Wednesday morning was too windy for pupils. During the afternoon M. Baumann was up on 60 h.p. Caudron, rising to 6,000 ft. Mr. Goodden made a flight on 35 h.p. Caudron No. 3 to an altitude of 2,000 ft. School out at 5.50 p.m. M. Baumann instructing Mr. Watts on Caudron No. 1, who was doing circuits and figures of eight, and Capt. Jennings, who was doing half circuits and circuits in good style. Lieut. Bewes and Mr. Warren made flights on same machine. On No. 2 M. Baumann was instructing Mr. Scott, who was rolling, and Mr. Macgregor, who was doing straight flights.

The school was out at 5.40 a.m. on Thursday, when after test flight by M. Baumann on Caudron No. 1, he handed machine to Lieut. Bewes who made a flight. Mr. Watts was doing figures of eight, making good landings, and Capt. Jennings circuits, landing well. Mr. Warren flight on same machine. On No. 2, Mr. Scott rolling. During afternoon M. Baumann made a flight on 60 h.p. Caudron to Wembley and Greenford. Messrs. Warren and Goodden made flights on Caudron No. 3. Mr. Watts started the tests for his certificate but after two figures of eight a wire broke and he had to postpone it. On Caudron No. 2 Mr. Scott rolling.

Hall School.—Monday last week Scotland gave straight flights on Blériot. Mr. Hall whilst flying Caudron had the misfortune to lose a wheel, which fell to the ground. Luckily, however, several pupils saw it, picked it up, and when Mr. Hall passed on second circuit, waved it frantically in the air. Thus Mr. Hall, by an extremely careful landing, averted what might have been a nasty smash.

Scotland four straights, Tuesday 6 a.m., on Blériot; afterwards mounting the Caudron made a straight flight, but landed heavily. Wednesday evening, Scotland twelve straight flights rising ultimately to 10 ft. Landings much improved. Thursday, Mr. Hall exhibition on Caudron. Scotland twenty flights on Caudron.

Mr. Hall flying on Caudron, Friday. Lieut. Gran, who took a prominent part in the Scott South Pole expedition, has rejoined school, and was taken for passenger flight by J. L. Hall.

Saturday, Mr. Hall exhibitions on Caudron. Later on in evening Scotland made two exceedingly good flights, landing in approved style. Lieut. Gran two straights, but had hard work to steer owing to falling darkness.

* * * BRITISH NOTES OF THE WEEK.

Edinburgh to Glasgow £1,000 Prize.

WE are informed by the hon. secretary of the Scottish Aeronautical Society that during the past few months the belief has arisen that the above prize has been withdrawn. We are asked by him to intimate that he is informed by the proprietors of the *Daily Record and Mail* that their prize is still on offer. The flight is to be from Edinburgh to Glasgow, and must be on a Scots-built machine. The aviator requires to be a Scotsman who has given some previous proof of his ability to fly. The building of the machine in Scotland does not exclude the use of raw material which may be manufactured elsewhere, nor does it prevent the engine castings being obtained in England, provided they are machined and the engine fitted in Scotland. This prize has now been offered for some considerable time, and it is remarkable that no effort has been made to win the same. The course is a very simple one, and the distance only 42 miles. We understand that recently a number of inquiries have been made regarding the conditions of the competition, and we believe that an attempt will shortly be made to win the prize by one or two parties who have been very quietly working in Scotland during the past few months.

Aviation in the North.

THE North-East Coast Institution of Engineers and Ship-builders, the oldest engineering institution on the Tyne, has absorbed the Northumberland and Durham Aero Club, and has formed an Aviation Section under a council, the members of which are also members of the Institution and of its Council. The Hon. Sir Charles A. Parsons, C.B., is the President. A series of lectures is being arranged for the ensuing session.

The Naval Wing of the R.F.C.

AN Admiralty order has been issued directing that from October 1st the whole of the ranks and ratings of the Naval Wing of the Royal Flying Corps are to be borne on the books of the

Salisbury Plain.

Bristol School.—Monday last week, no flying in the morning, wind and rain. Pixton first out evening, Mr. Garnett passenger, testing new tractor for Roumania, reaching 3,400 feet. Sippe, with Lieut. Jenkins, testing tandem monoplane at 3,400 feet. Jullerot trial for school, then biplane tuition to Lieuts. Gallaher and Cooper and Air-Mechanic Locker. Good solos by Capt. Ferguson (two), Asst.-Paymaster Coles and Messrs. Courtney and Voigt two each. Pixton another trip in tractor with a passenger.

Pixton, Tuesday, very early for trial. Jullerot in tandem monoplane, later giving biplane tuition to Capt. Ferguson, Lieut. Cooper, Lieut. Jenkins, Asst.-Paymaster Coles, and Mr. Courtney instructing pupils for landing *en vol plané*. Jullerot took on another new tractor just up from the Filton works. Sippe two solos on same machine. Pixton, biplane tuition to Capt. Hay, Capt. Ferguson, Lieut. Jenkins, Air-Mechanic Locker, and Mr. Voigt, two trips each pupil. Capt. Ferguson, Lieut. Jenkins, Mr. Courtney, and Mr. Voigt two capital solos each. Mr. Garnett two trips on a tandem monoplane.

Pixton with Lieut. Cooper, Wednesday, for trial, afterwards giving biplane tuition to Asst.-Paymaster Coles and Lieut. Cooper. Sippe solo on tandem monoplane, followed by Mr. Garnett on similar machine, latter making two very nice trips. Capt. Ferguson, Lieut. Jenkins, Mr. Voigt and Mr. Courtney all two good solos each.

In the afternoon Pixton trial and Mr. Voigt for long high flight. Capt. Hay, Capt. Ferguson, Asst.-Paymaster Coles, and Mr. Courtney solos. Pixton on biplane, with Lieuts. Gallaher and Cooper and Air-Mechanic Locker. Jullerot, with Lieut. Gallaher on a trial on a tandem mono., later taking Mr. Cooper for flight in new tractor. Sippe flew to Netheravon in tractor to fetch observer for pupil's certificate, later taking the officer back. Mr. Garnett accomplished the necessary flights for his ticket in great style, flying throughout particularly well. Pixton finished up by taking a passenger for a trip.

Jullerot trial Thursday, after which Lieut. Jenkins satisfactorily passed for his *brevet*, carrying out his tests in an excellent manner, landing *en vol plané* on to the mark every time. Pixton biplane tuition to Lieut. Gallaher and Air-Mechanic Locker. Jullerot with Lieut. Cooper and Asst.-Paymaster Coles. Jullerot later with Lieut. Cooper on tractor, and Sippe for couple of flights on same machine.

Friday, Jullerot trial, Sippe with Asst.-Paymaster Coles to 2,000 ft. on tractor. Weather bumpy. Capt. Ferguson, Mr. Courtney and Asst.-Paymaster Coles and Mr. Voigt solos on biplane. Jullerot with Lieut. Cooper, Asst.-Paymaster Coles and Air-Mechanic Locker, twice each pupil.

Strong gusty wind prevented flying all day Saturday.

"Hermes," light cruiser, Captain G. W. Vivian, parent ship of the Naval Wing, with the exception of officers and men (including Marine officers' servants) on the staff of the Central Flying School, Upavon, who are to be borne on the books of the "President."

Army Dirigibles on Salisbury Plain.

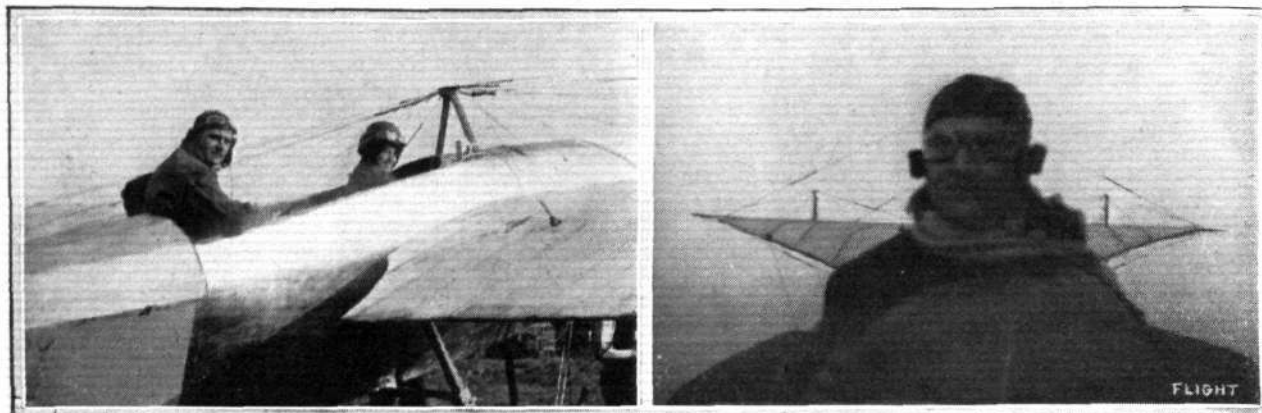
IT has been decided by the Army Council to erect airship sheds at Perham Down, Salisbury Plain, a point adjacent to Ludgershall Station on the Midland and South Western Junction Railway. In connection with this new scheme, certain buildings now at Aldershot, we understand, are to be taken down and re-erected on the Plain.

Mr. Harold Blackburn's Work.

THE whole of the past week Mr. Harold Blackburn has been flying the 80 h.p. Blackburn monoplane at Harrogate, passenger carrying. On Monday he made several trips with passengers over the Stray and the outskirts of the town, and then made a final flight of half an hour's duration with Dr. Christie as passenger. In this last flight he made some clever evolutions before a large crowd of spectators on the Stray, on several occasions turning and banking his machine very steeply.

On Wednesday he took a lady passenger over to Ripon, where he landed on the racecourse and remained for about an hour. He returned later in the afternoon, and again landed on the Stray. During one of his passenger trips on Thursday, with Dr. Christie as passenger, he was flying at about 3,000 ft. when his engine started back firing. He cut off the petrol, stopping his engine at that altitude, and planed down in spiral form on to the Stray, landing perfectly.

On Saturday afternoon he flew over from Harrogate to Ripon, where he was booked to give an exhibition in the afternoon. Dr. Christie went with him as passenger. He made several flights during the course of the afternoon with passengers, and, after the exhibition, returned to Harrogate.



MR. H. BLACKBURN AT BRIDLINGTON WITH HIS MONOPLANE.—A couple of snaps taken by Mr. C. S. Burney, of Berkhamsted. On the right is a picture of Mr. H. Blackburn taken from the passenger seat.

Harrogate to Bridlington and Back.

ON Monday last Mrs. Leigh, of Harrogate, had an exceptional experience in a trip on Mr. Harold Blackburn's monoplane from Harrogate to Bridlington and back, when the return journey was made at a very high speed owing to a terrific following wind, which enabled the distance to be covered in about 40 mins.

Cardiff to Ilfracombe and Back.

A RACE was to have been run off from Cardiff to Swansea and back, a distance of 80 miles, between Mr. Edwin Prosser, of Birmingham, and Mr. Francis Glew, of Northampton, on Saturday last, but a postponement had to be made owing to rain, mist, &c. Mr. Prosser, on Monday, however, made a good flight from Cardiff to Ilfracombe and back on his machine, crossing the Bristol Channel, and steering down the Somerset and Devon coast line, whence he returned to Cardiff. Altogether he was in the air about 40 mins., and travelled 60 miles, winding up with a spiral descent from 5,000 ft.

Mr. Sydney Pickles Does a High Climb.

ON Tuesday, whilst testing a new 80 h.p. Short biplane at Eastchurch for delivery to the Admiralty, Mr. Sydney Pickles climbed to a height of 9,500 ft., from which height a splendid descent was made back to the Eastchurch aerodrome.

Mr. Collyns C. Pizey Takes up His Greek Duties.

THIS week Mr. Pizey has gone to Athens, where he has formally taken up his duties in connection with the organisation of the Grecian Naval Aviation Department. Everybody will wish him the best of success, which he so thoroughly deserves, in his new departure. His official designation in Greece will be Capitaine de Freigate Collyns C. Pizey, Marine Royale Hellenique.

Chevillard Delivers an H. Farman Navyplane.

CHEVILLARD, on the 11th instant, accompanied by his mécanicien Forest as passenger, flew a new Henry Farman seaplane from Boulogne to the Isle of Grain for delivery to the Admiralty. Leaving Boulogne at two, he alighted at Margate to enquire his whereabouts, and then proceeded on to the Isle of Grain, where he came down at 3.45, close to the torpedo craft. Chevillard has since gone on to Denmark, where he has just made a flight from Copenhagen to Gottenberg.

Another Cody Fund.

A FURTHER fund has been started for the collection of 20,000 shillings for Col. Cody's widow by the editor of *Modern Life*.

Mr. H. Diamond, of Lucerne, one of the supporters of this paper, generously offered to put down one shilling for every other shilling subscribed by the readers of *Modern Life*, the same donor having started the subscription with 2,000 shillings to give the fund a send off.

Helping the Cody Fund at Liverpool.

MR. H. G. MELLY, of the Liverpool Aviation School, Sandheys Avenue, Waterloo, writes us that he has now completed all arrangements for giving exhibition flights on the Aintree Race-course on behalf of the Cody Fund. The proprietors of the race-course, who had a personal interest in Cody in the past, have lent the ground gratis, and Sir William Hartley, who also had an indirect interest in Cody's progress, has offered to defray part of the expenses of the meeting. Mr. Melly has personally offered to provide two machines, piloting one himself, and Mr. Hardman has volunteered to pilot the other. All that is now required is assured weather to add a substantial sum to that already subscribed.

Naval Pilots in Army Manœuvres.

THE four Naval aeroplanes selected for participation in the Army manœuvres are two Short biplanes, a Sopwith and a Blériot mono. These start on the 25th for the scene of operations, the pilots including Commander C. R. Samson, and Flight Commanders Engineer-Lieut. E. Featherstone Briggs and Capt. Ivor T. Courtney, Royal Marine Light Infantry.

Messrs. Short Bros. Going to Rochester.

MESSRS. SHORT BROS., the earliest pioneers in British aircraft construction at Eastchurch, Sheppey, have taken an important site on the Medway, near Rochester Bridge, where the business is likely to be greatly extended.

The "Eta" Makes a Long Cruise.

ON Saturday last, an extended flight of over 8 hours was made by the Army airship "Eta," at an average speed of about 35 m.p.h. Starting from Farnborough at 6 a.m., with five on board, the first point for which she made was Portsmouth, turning west from there and steering along the south coast, sighting Farnborough again at about 2 p.m., landing a quarter of an hour afterwards in a fairly strong wind. During the trip, which was a preliminary to her taking part in the Army manœuvres this week-end, when her base will be at Dunchurch, near Rugby, she carried besides her crew, 500 lbs. of ballast.



TWO MORE SNAPS OF MR. H. BLACKBURN AND HIS MONOPLANE AT BRIDLINGTON.—On the left "swinging" the propeller, and on the right just away.

THE VOL PIQUÉ.

By J. H. HUME-ROTHERY, M.A., B.Sc.

[FOLLOWING upon a request made at the time of the last Olympia Show, Mr. J. H. Hume-Rothery has been devoting a great deal of his time to the mathematical investigation of the conditions represented by the forced dive as a consequence of being partially stalled in the air. The question as to the least height in which it is possible to recover horizontal flight after being stalled is a matter of first-class importance to pilots, for there is evidence that more than one accident has happened as a consequence of being unable to flatten out in the height available. We trust, therefore, that Mr. Hume-Rothery's article, which represents infinitely more labour than is apparent from the abbreviated and simplified form in which he presents his conclusions, will be read with the interest and appreciation that it deserves.—ED.]

If an aeroplane loses its velocity relative to the air in which it is flying, the air pressure on its wings is then insufficient to support its weight, and it begins to descend. If this loss of velocity is considerable, the descent will be a more or less headlong dive—a *vol piqué*—in which, like any other falling body, the aeroplane will regain speed. This loss of velocity may be due to the pilot's attempting to climb too steeply, and so bringing the aeroplane almost to a standstill, but it may also be due to causes quite beyond his control, such as sudden changes in the strength of the wind. While ordinary gusts are of very short duration, it is pointed out on p. 217 of the Technical Report of the Advisory Committee on Aeronautics for 1911-12, that not infrequently gusts occur which last for one minute or even longer. If an aeroplane is flying down-wind during such an increase of wind velocity, or flying up-wind during a sudden lull, it experiences a sudden loss of relative velocity, and a dive must follow.

The most important point in practice is to know how great a vertical fall the aeroplane must undergo before it can regain its normal speed and horizontal direction of flight, as if it reaches the ground before this an accident will probably occur. A knowledge of this matter then will help us to form an estimate of the minimum height above the earth at which it is safe to fly.

In order to calculate this, it is necessary to know exactly the air pressures on the aeroplane at all velocities and angles of incidence. The above-mentioned Technical Report gives these very fully on p. 112 for the aeroplane BE 2, and consequently I have adopted this aeroplane and the data given for the purpose of the following calculations, and the results obtained may be taken as typical of all aeroplanes. From the diagram opposite p. 112, I have calculated and plotted on a chart the lift and total resistance in lbs. for all angles of incidence from 2° to $12\frac{1}{2}^\circ$, at a velocity of 1 ft. per sec. per lb mass of aeroplane, so that to get the actual lift and drift, one must multiply by V^2 (in ft. per sec.), and by the mass of the aeroplane (1,530 lbs.).

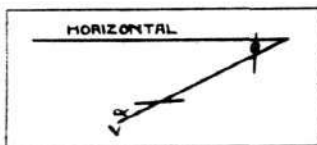
If V = velocity of aeroplane in feet per sec.,
 ϕ = inclination of its path below the horizontal,
 α = angle between the chord of wings and direction of motion,
then the equations of motion are

$$\frac{dV}{dt} = g \frac{\text{thrust}}{\text{mass}} + g \sin \phi - g \left(\frac{\text{drift in lbs.}}{\text{mass}} \right)$$

$$\frac{d\phi}{dt} = \frac{g \cos \phi}{V} - \frac{g}{V} \left(\frac{\text{lift in lbs.}}{\text{mass}} \right)$$

This method, using V and ϕ , has proved much more convenient than attempting to use the horizontal and vertical components of motion. When the values of V and ϕ have been calculated at regular intervals of time the course of the aeroplane can be easily plotted.

The aeroplane BE 2 flies normally at about 3° incidence, which corresponds to a velocity of 91.6 ft. per sec., and in the following calculations I have assumed its velocity initially reduced to 50 ft. per sec. This would be caused by a gust of 41.6 ft. per sec., or about 28 m.p.h. Since the gusts given on the above-mentioned p. 217 show sudden changes of 15 miles an hour when the average



strength of wind was under 30 m.p.h., I think such a change as 28 m.p.h. is quite within the limits of possibility with a wind of 50 or 60 m.p.h.; and it might easily be exceeded by a careless use of the elevator, causing partial stalling of the aeroplane.

If the engine should fail at the same time as the loss of velocity occurs, which is quite conceivable, the resultant dive will, of course, be deeper than if the engine is pulling, and since our object is to ascertain a safe height for flying, the following calculations are made with the engine stopped.

It is also assumed that the pilot has full control over the elevator, so that he can regulate the angle of incidence as he pleases, and counteract any effect due to the moment of inertia of the aeroplane about a transverse axis. The area of the elevator is about

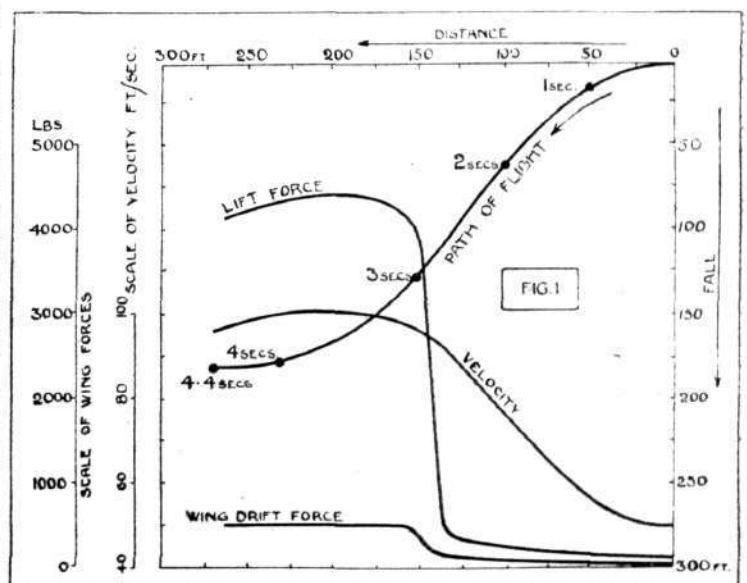
25 sq. ft., which, if deflected 20° at a speed of 62 m.p.h., would give a pressure of about 210 lbs. at a distance of 16 ft. from the centre of gravity, or a couple of 3,360 ft.-lbs. Since the moment of inertia of the aeroplane is given as 1,300 ft.² lbs., this would give an angular acceleration of about 2.6 . At a speed of 50 ft. per sec., or about 34 m.p.h., it would give about $.8$.

The calculations show that generally this is sufficient for the purpose, but at one or two points where there is a sudden change in the angle of incidence this change may require a fraction of a second more time than has been allowed. Also at the beginning of the dive the aeroplane must make a sudden swing downward, for which the elevator would be insufficient if the gust of wind were absolutely instantaneous, as the elevator would take about $\frac{3}{4}$ sec. to give the necessary downward swing. As, however, no gust is absolutely instantaneous, but takes perhaps $\frac{1}{2}$ sec. or more to develop its full force, the elevator has probably sufficient time for the purpose. In no case can this assumption lead to more than a small error.

While sufficient for the above purpose, it is also assumed (which is only approximately true) that the variations of force on the elevator may, in calculating the motion of the centre of gravity of the aeroplane, be neglected in comparison with the pressures on the main planes.

In the first calculation (the results of which are given in Fig. 1), the aeroplane with velocity of 50 ft. per sec. in a horizontal direction starts from 0. The pilot puts the elevator hard down, so as to make the aeroplane not only swing downwards in conformity with the natural trend of its course, but to reduce the angle of incidence so as to make the head resistance a minimum, and recover velocity as rapidly as possible. This is attained when the angle of incidence is -1° as measured from the chord. This still leaves a slight lift, as the neutral axis is at an angle of about $-2^\circ 30'$, i.e., the chord must be inclined downwards about $2^\circ 30'$ for the lift to vanish.

The pilot maintains this angle of incidence till the expiration of $2\frac{1}{2}$ secs., when he has approximately attained his normal velocity of 91.6 ft. per sec. He then puts his elevator hard up, so as to increase his angle of incidence to the critical angle of $12\frac{1}{2}$ per cent., which is supposed to be obtained in $\frac{1}{4}$ sec., viz., at 3 secs. (strictly, it would take between $\frac{1}{4}$ and $\frac{1}{2}$ sec.), and he then manipulates the elevator so as to maintain this angle of incidence till the completion of the flattening out, which occurs at 4.4 secs. when his velocity is 95.8, or slightly in excess of the normal 91.6. The total vertical fall has been about 184 ft., and it may be noted that the actual flattening out (from a downward inclination of about 55°), which has been accomplished as rapidly as possible, has taken about 75 ft.



In the course of the calculation it appeared that it was an easy matter to obtain the forces on the wings, and so they were worked out and are plotted in Fig. 1.

The next calculation was made to ascertain if it would be advantageous to flatten out more gradually, and the results are shown in Fig. 2. In this case, after diving at an incidence of -1° as before, the elevator was put up earlier, namely at 2 secs., when the velocity was $75\frac{1}{2}$ ft. per sec., but not quite so hard, giving an incidence of 9° , and the pilot was supposed to maintain this angle of 9° constant till the end. The total vertical fall has been 150 ft., and the final velocity $91\frac{1}{2}$, while the wing stresses have been much less.

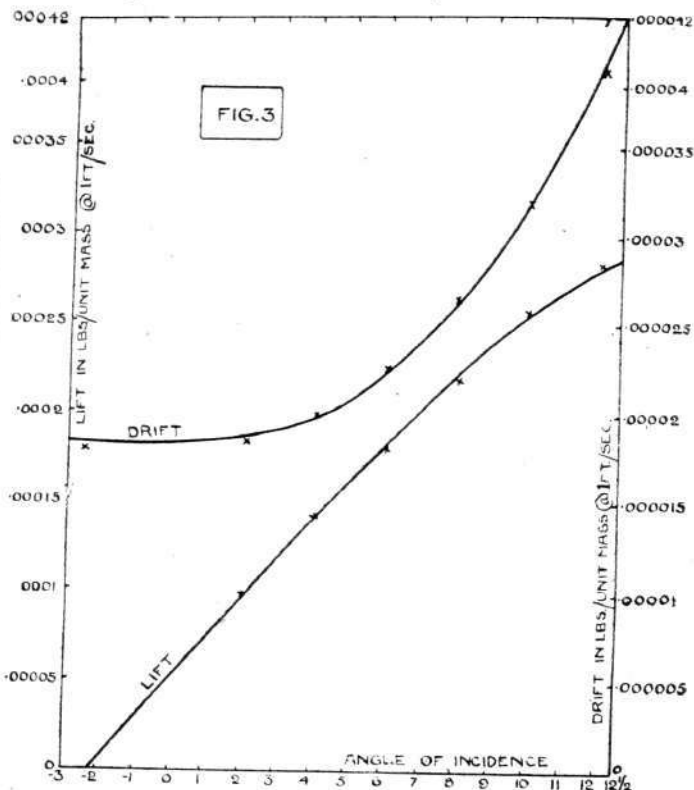
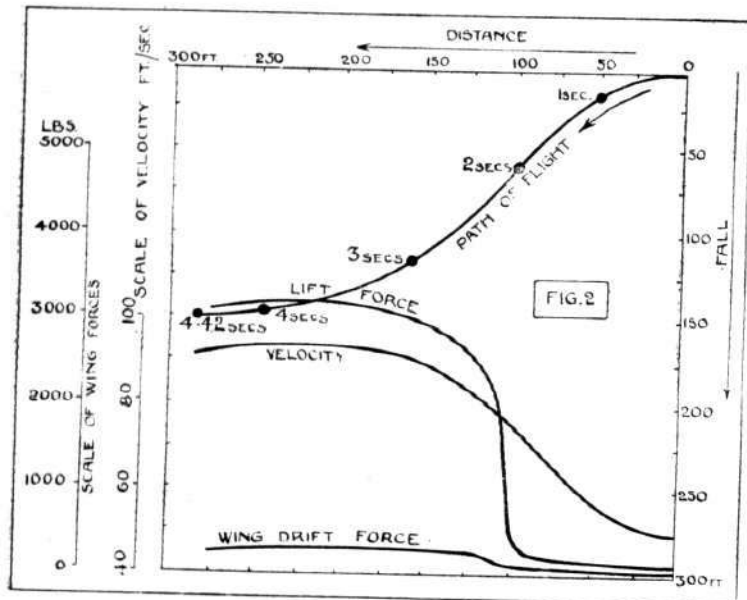
This has been obviously more advantageous than the former method although the final velocity is less. Later on I shall discuss the exact allowance to be made for this difference of velocity.

It having been thus shown that the vertical fall needed to recover the velocity depended on the method of diving adopted, it became desirable to consider whether it was possible to ascertain mathemati-

and jerk the pilot out of his seat. Moreover the above formula for the drift does not hold when θ is negative, as $\sin^3\theta$ changes sign, and $\frac{d\theta}{dt}$ may become discontinuous when $\theta = 0$ as well as when $\phi = 0$.

The numerical solution is very laborious, and when choosing the initial value of θ one cannot foresee the final result, so that one has to make several abortive calculations before obtaining one leading to approximately the desired conclusion.

Fig. 4 shows the results of one calculation, giving a final velocity of $86\frac{1}{2}$ ft. per sec. and vertical fall of 125 ft.



The change of the angle of incidence α is also plotted.

The aeroplane starts with a velocity of 50 ft. per sec. in a horizontal direction as before. The equations show that the angle of incidence ought initially to be a large negative quantity, but as this is impossible the pilot must put his elevator down sufficiently to bring it to the limit of $-2^\circ 30'$ and keep it so for $\frac{2}{3}$ sec.

The angle of incidence is then increased, rapidly at first and then more and more gradually, ending with a final value of $11\frac{1}{2}^\circ$.

In actually performing this manoeuvre the moment of inertia must be taken into account by the pilot.

At the beginning the course of the aeroplane is curving rapidly downwards, and the aeroplane which was flying horizontally must

cally the best method of diving so as to give the least vertical fall possible. This has to be done by an application of the calculus of variations.

For this purpose it is necessary to be able to express the lift and drift accurately by mathematical formulæ. The ordinary formulæ for a plane, $\text{lift} = KSV^2 \sin \theta \cos \theta$ and $\text{drift} = KSV^2 \sin^3 \theta + HV^2$, are very inaccurate for a cambered wing, even if θ is measured from the neutral axis. They can be made more accurate by giving different values to K for the lift and drift, but even so lead to errors of as much as 10 per cent. or more for very small and large angles of incidence.

After considerable labour I have discovered that for the aeroplane BE 2, both lift and drift may be represented with great accuracy in the forms, $\text{lift} = l \sin^3 \theta V^2$, and $\text{drift} = d \sin^3 \theta V^2 + hV^2$, when θ is measured from the neutral axis, and hence $\alpha = 2^\circ 30'$.

The closeness of agreement may be seen from Fig. 3, where the lift and drift curves are those obtained from the Technical Report (the portions below 2° being filled in by comparison with the diagrams opposite p. 67 of the Report), while the small crosses show points given by the formulæ: Lift in lbs. per lb. mass of aeroplane at a velocity of 1 ft. per sec. = $0.000421 \sin^3 (\alpha + 2^\circ 30')$, and $\text{drift} = 0.0013 \sin^3 (\alpha + 2^\circ 30') + 0.0000179$, and consequently the equations of motion become—

$$\frac{dV}{dt} = g \sin \phi - DV^2 \sin^3 \theta - HV^2, \text{ and } \frac{d\phi}{dt} = g \frac{\cos \phi}{V} - LV \sin^3 \theta.$$

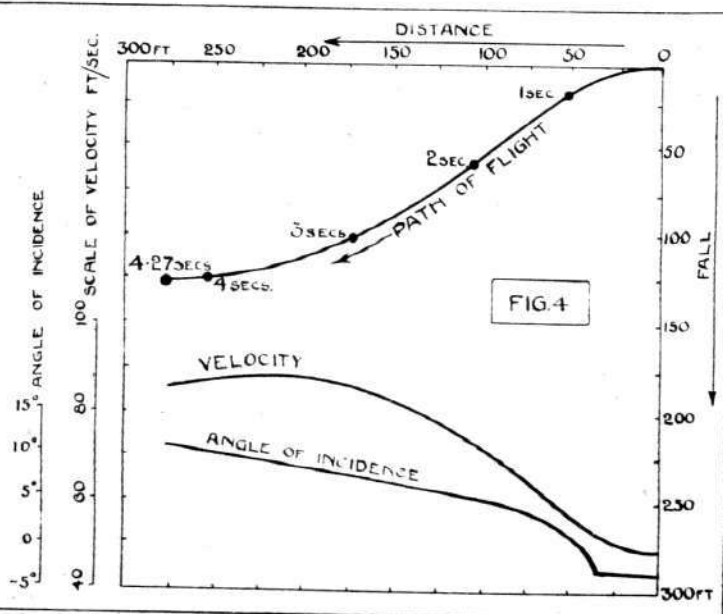
where $\theta = \alpha + 2^\circ 30'$ and D , H , and L have the values given above multiplied by g .

A prolonged investigation by the calculus of variations gives the following equation to determine the best method of diving:

$$\frac{d\theta}{dt} = \frac{g \sin \theta \cos 3\theta \cos 2\phi}{2V \cos^2 \theta \sin \phi} + \frac{Dg}{L} \cdot \frac{1}{V} \cdot \frac{\sin^2 \theta \cos 3\theta}{\cos^2 \theta} \cot \phi + \frac{HLV}{D} \cdot \frac{\cos^2 3\theta}{\sin 2\theta \cos^2 \theta} \cdot \cot \phi$$

which together with the two former equations completely determine the motion when the initial conditions are given.

In making a numerical calculation from these equations, certain limitations are necessary. The angle of incidence must not exceed the critical angle of $12\frac{1}{2}^\circ$, neither must it be less than $-2^\circ 30'$ (i.e., $\theta = 0$) for that would give a downward pressure on the planes



be given a swing downward by a strong forward jerk of the elevator. The elevator must not be kept in this position, however, more than momentarily, but brought back to a little in front of its normal position, as the curvature of the path is decreasing, and will tend to keep the angle of incidence less than that due to the position of the elevator. The elevator is then pulled back strongly to give the increase in the angle of incidence by an upward swing. This upward swing once established the elevator may be released considerably, as the increase in the angle of incidence is quite gradual after the first.

Not being a practical pilot, I have written these remarks with considerable hesitation, especially as to advising a strong forward jerk of the elevator at the beginning. In regard to this last point, however, it must be remembered that the aeroplane is flying at little more than half its proper speed, so that the force of the elevator is reduced to little over a quarter of the normal, and a much stronger movement is needed than when the aeroplane has its normal velocity. The force is only needed to start the downward swing, and so need only be applied for a second or less.

The calculations I have made also indicate that if the amount of velocity to be regained is greater, the preliminary portion of the dive with $\alpha = -2^\circ 30'$ should be increased, and the increase of α when it takes place should be more gradual. If less gain of velocity is required, the preliminary portion is curtailed, and the increase of α more rapid, at any rate at first.

I have not troubled to calculate the wing forces throughout the whole course. They attain their maximum at the end, when the lift force amounts to about 3,268 lbs., and the resistance wing force to about 342 lbs.

It may now be interesting to try and compare the relative advantages of the three dives a little more accurately. In the first, an

increase of velocity from 50 to 95.8 took 184 ft. vertical fall. In the second, from 50 to 91.1 took 150 ft. In the third, 50 to 86 took 125 ft. It would have been more satisfactory if the increase had been the same in each case, but as each calculation is a prolonged task it must suffice to make an approximate comparison. The gain of energy in the three cases is $95.8^2 - 50^2 = 6,677$; $91.1^2 - 50^2 = 5,799$; and $86^2 - 50^2 = 4,999$. If in any one method of diving the gain of energy were proportional to the vertical fall, then the vertical fall needed to produce a velocity of 91.1 would in the first case have been 159 ft., and in the third 145 ft., compared with the 150 ft. actually taken in the second case.

But this is hardly a fair comparison, for if the aeroplane had been gliding down at its best gliding angle and velocity it would have gained no velocity and yet have suffered a fall, and so it seems fairer to assume the gain of energy proportional to the excess of fall over the fall that would have occurred at the best gliding angle (stated to be 1 in $8\frac{1}{2}$ for BE 2). On this basis the three results would come to 164, 150, and 140 ft. respectively.

Probably the truth lies between these two sets of figures, but in any case the advantage of the third method is proved—a short dive as steep as possible followed by a gradual flattening out in which the angle of incidence is continually increased. Also these results give a fair estimate of the least height at which it is safe to fly. In a strong wind even with a perfect pilot anything under 200 ft. is getting near the margin of safety, as if a prolonged gust should coincide with the failure of the engine a dive must be made that will take somewhere in the neighbourhood of 150 ft. vertical fall.

In a light wind less will suffice, unless some error in management causes a considerable loss of velocity.

(To be continued.)

FOREIGN AVIATION NEWS.

Paris to Berlin Without a Stop.

A MAGNIFICENT voyage was made on Saturday last by M. Augustin Seguin on an 80 h.p. Gnome-engined Henry Farman biplane, when he put up a non-stop flight from Paris to Berlin in under 11 hours. This is the first time that this journey has been accomplished without a break. The flight was in connection with the competition for the Coupe Pommery, M. Seguin getting away from Buc on his Gnome-Farman (Chauviere propeller) at 5 hrs. 26 mins. 30 secs. by the clock. He carried with him 300 litres of fuel, but this did not hinder him from rising rapidly, his course being directly eastwards. Without incident, he landed at Johannisthal at 4.21 p.m., having, therefore, covered the 950 kiloms. in 10 hrs. 51½ mins. His intention was to have continued on further in connection with the Pommery Cup, but a strong contrary wind having sprung up during the latter part of the voyage, he abandoned this intention, as it was hopeless for him to attempt under the circumstances to beat the record of Guillaux.

Reichelt Flies from Berlin to Paris.

ANOTHER aviator last week completed a flight from Berlin to Paris with a passenger, three days being taken for the journey. Starting on Sunday morning from Johannisthal, Reichelt with his mechanic Hanel as passenger, made a first stop at Wanne for replenishment at 6.30 a.m. His landing was ill-judged, with the result that his chassis was damaged, preventing the possibility of a restart until Monday. On that day at 2.30 Reichelt was away again, descending in the evening outside Creteil, restarting the next morning for Villacoublay. Reichelt found considerable difficulty in keeping to the route, and first descended at Chateaudun and a little time after at Chartres to find out his whereabouts, another landing being made at the St. Cyr Military Aerodrome, which was again left at 10.30, Villacoublay being finally reached without further incident.

Fourny's Daily Flights Terminate.

WITHOUT a break from day to day, Fourny maintained his extraordinary series of flights in connection with the Coupe Michelin on the Etampes-Gidy course, until Monday night of this week, when he had covered 15,686 kiloms. Fourny had the intention of finishing at 20,000 kiloms., but this was not to be. On Sunday last the weather was extremely trying, but, in spite of violent rains and wind, Fourny continued on and seemed none the worse for the bad experience of the day, whilst his machine was running, if anything, better than ever.

On Tuesday, after 23 days' flying, Fourny had at last to confess himself beaten by the all conquering wind, which was blowing hard from the start in the morning, regaining double vigour after the first hour or two. He managed, however, to complete four tours of the circuit even under these circumstances, but retired in the fifth, after having struggled valiantly to add to his total. The exact distance covered by him was 16,090.800 kiloms., but only 15,990.8

kiloms. will count for the Cup as the fifth circuit was not actually completed.

All honour to Fourny, the Maurice Farman, Renault engine and Chauviere propeller for the magnificent series of flights over 23 consecutive days.

Copenhagen to Gothenburg by Aeroplane.

ON Sunday last, Chevillard on his Farman, accompanied by Capt. Bundstedt as passenger, made a splendid flight from Copenhagen to Gothenburg in Sweden. Starting from Paris on Tuesday 9.40 a.m. he passed over the Sound at a great height, and reached Gothenburg at 12 noon, covering the 260 kiloms. in 2 hrs. 20 mins.

Guillaux Flies at 210 k.p.h.

MAURICE GUILLAUX, during last week-end, flew to his native place, Savigny-sur-Braye, from Issy on his military 80 h.p. Gnome-Clement-Bayard monoplane, accompanied by M. Max Bruyere, where he gave some flights for the edification of his fellow citizens, and was by them entertained. He restarted for Paris on Tuesday last, and with a veritable hurricane blowing at his back covered the 190 kiloms. from Savigny to Paris in 50 minutes, giving the remarkable speed of 210 k.p.h. Starting at 4.15, a bee line was made for Paris, and almost immediately they sighted the Bordeaux-Paris express making for the same direction, but at the speed Guillaux was travelling this was left behind, almost standing still. Chartres was passed on the left at enormous speed, and when over the Rambouillet Forest, the air was so exquisitely clear that the Eiffel Tower was easily distinguished and Paris was laid out like a great map before the aviators' eyes. Within 50 minutes they were well over Paris, and with a fine *vol plané* came to rest once more at Issy.

A French General Flies to the Manoeuvres.

BY way of testing the practical usefulness of the army aeroplanes, General Drude, Commandant of the Oran Division in the French manoeuvres, decided to fly to his headquarters at Orleansville by way of the air, piloted by Sapper Servies. A start was made from the Senia Aerodrome, Oran, at 5.40 a.m., a descent being made at 6.35 at Relizane, 130 kiloms. away, for fuel. After a stop of a few minutes only, Charon was steered for, and reached without incident at 8.50, the total distance covered being 250 kiloms. General Drude was greatly impressed by his experience.

Friedrich Over Paris.

BEFORE leaving for London, Herr Friedrich made a prolonged flight over Paris on Thursday evening last week. Starting about 5.30 p.m. for Issy, he maintained a height of about 600 metres steering round the Eiffel Tower, finally returning to Issy with fine spiral *vol plané*. During Friedrich's trip, Guillaux, having arrived at the aerodrome, followed in the track of the German pilot, on his Clerget-engined Clement-Bayard, also circling over Paris for some time, carrying with him as passenger his brother-in-law.

A Good Flight by Pegoud.

LAST week Pegoud, who has been disporting himself at a Paris music hall, took charge of a Blériot machine at Hardelot and flew it to Buc in two hours, maintaining a height of about 1,500 metres during the 300 kilometres.

Santos Dumont at Villacoublay.

FOLLOWING the announcement of his intention to re-enter aviation actively, M. Santos Dumont is now under tuition at the Morane-Saulnier School at Villacoublay, and last week-end Mr. Gordon-Bennett at M. Santos Dumont's invitation, paid a visit to the schools, where he saw some very remarkable flying put up by MM. Garros, Gilbert, Legagneux, and Audemars. Even Mr. Gordon-Bennett was enormously surprised at the extraordinary facility with which these masters of the art manipulated their various machines.

The Michelin Target Prize.

FROM September 7th to 14th, several competitors took part in the 50,000 francs prize for the L'Aero Cible Michelin. At Buc, Capt. Leclerc, with Sapper Lemelle as passenger, landed 7 bombs out of 15 on the target, Lieut. Varcin 13 out of 15, Lieut. Cesari failing with all 15, Lieut. Drouot placed 4 bombs, whilst the Marquis de Lareinty Tholozan, with his brother as passenger, got 7 bombs in out of the 15; M. Gaubert, with Desmoulins as passenger, placed 4. The winner of the prize is Lieut. Varcin, *ex æquo* Lieut. Lareinty Tholozan and Capt. Leclerc, Gaubert being fourth. The competition required that from a height of 200 metres as many as possible out of 15 bombs should be placed within the range of the target on the ground. Each bomb was 15 centimetres in diameter, and weighed 7.1 kilogs., whilst the target measured 20 metres in diameter.

The King of Belgium and Aeroplanes.

AFTER the Military Manœuvres, King Albert of Belgium expressed himself very strongly in favour of the valuable help which has been evident in connection with the aeroplanes employed in the Army. His Majesty, under the guidance of Commandant Mathieu, specially reviewed the two escadrilles, including the general equipment of the flying corps. After a careful inspection of the whole of the service, King Albert was particularly complimentary to Lieut. Nelis, the technical officer in charge.

A Night Flight in Germany.

HERR STOEFLER, the German aviator, starting from Mulhausen, in Alsace, during Monday night, at 12.24, flew as far as Plotsk, near Warsaw, a distance of about 1,200 kiloms., reaching there at 8.30 in the morning. From this point he proposes to continue his journey to Kieff.

Freiburg to Königsberg.

IN splendid flying weather on Tuesday last, Stievater, a German pilot, flew from Freiburg, in Baden, to Königsberg, a distance of about 700 miles. Leaving with Lieut. Zimmerman, as passenger, at 4.40, he arrived at Gotha at 9.20, landed at Johannisthal at 11.28, leaving there at 12.29, and finished at Königsberg at 6.35.

Wilhelmshafen to Heligoland.

THE above flight recorded last week was made on the Avro machine, which, it will be remembered, was flying so well at Brighton during June last. It is gratifying to know that similar machines are now being made for the British Admiralty.

Lighthouses for Aircraft.

AT the suggestion of the Zeppelin Co. the town council of Bieberach proposes to put up in an open space in the outskirts of the town an electric searchlight capable of being seen by airships and dirigibles at a radius of between 25 and 30 kiloms. The German Press is urging other towns to follow this example.

A German Navyplane Station.

THE German island Sylt in the North Sea, off Schleswig, is to be created a naval seaplane station.

A Fatal Accident at Hunsrueck in the Rhine Province.

DURING the 16th Army Corps Manœuvres a bad accident occurred through one of the military biplanes, occupied by two officers, getting out of control on the ground and instead of rising in the air, making a sharp turn and dashing into the public standing on the confines of the grounds. As a result four people met with their deaths, whilst several others were injured. Neither of the aviators were hurt beyond being bruised.

An accident of a similar character is also reported from the Military Camp at Carcassonne, but fortunately without any fatality.

Bider Has an Accident.

ACCOMPANIED by Capt. Real as observer, Bider, in connection with the Swiss manœuvres made a flight on Thursday last week over the field of operations, but by some means through fog he lost his bearings; attempting to regain the proper route he ultimately made a landing near Berne, and when a few metres from earth his

machine unfortunately struck some posts which were invisible in the mist, which was the original cause of his having lost his way. The machine was badly smashed, and Bider was injured about the head, but Capt. Real received only slight damage to his face. Although we understand Bider was not very seriously hurt his experience was a nasty one.

Fine Flight by an Italian Officer.

A SPLENDID trip was made last week on a 70 h.p. Farman by Lieut. Bailo, the chief instructor at the Pordenone Military Aviation School. Starting from San Francesco he arrived at Comina, a distance of 450 kiloms. in 5 hours 20 mins. without a stop, passing over *en route* Vigebano, Abbiategrasso, Crema, Verona, Vincenza, Conegliano. Throughout, Bailo maintained an altitude of about 1,500 metres, and encountered a very strong contrary wind when passing over the Lake of Garda.

Roumanian Height Record.

LIEUT. CAPSA, on a Blériot monoplane, on the 12th inst., put up a new Roumanian record by climbing to 4,025 metres.

"Looping the Loop" in Russia.

FROM a report to hand from Kieff, Lieut. Nesteroff is reported to have made a complete vertical circle on his Nieuport machine at a height of about 1,800 ft., landing afterwards with a well-judged *vol plané*. As a sequel to this performance, a further telegram states that the authorities have decided to inflict a penalty for this type of stunt by condemning the lieutenant to thirty days' detention for "useless audacity."

Aviators' Fatal Accidents.

ONE aviator who was last week given up as dead, Herr Senge, has since been reported as only very seriously injured, but on the other hand there are several more deaths to record since our last issue. On the 9th inst. Georges Chaunienne was killed whilst flying at Bron near Lyons. He was attempting a *vol piqué* at the aviation school, and apparently misjudging his distance, flattened out too late. The machine smashed to the ground, and the aviator was killed instantly.

At Gatchina, Avinas, on the 12th inst., whilst flying from Krasnoe Selo to St. Petersburg, met his death from the sudden turning over of his machine by a violent gust of wind. The Minister of the Interior, who happened to be passing in his automobile at the time, was the first to endeavour to help the unfortunate flyer.

At Bork, Hans Lorenze on a Grade monoplane, following the breaking of a wing, was thrown violently to earth, his machine catching fire and burning him to death.

At Bucharest the Roumanian aviator Aurele Vlaieu fell from his aeroplane, one of his own design and building, and was killed.

No Flying Over the Panama Canal.

DURING April last, Mr. R. G. Fowler, it will be remembered, made a flight over the Panama Canal, starting from the Pacific side, and in consequence of subsequent interviews with the aviator as to his experience, in which the facility with which the canal could be destroyed from an aeroplane was painted in very vivid journalistic colours, President Wilson has now issued an order forbidding all flying over the canal zone, without written authorisation from the United States Government. Any infraction of this will entail a heavy fine and a year's imprisonment for each violation of the law. It is stated that several waterplanes are to be stationed at the canal, and do part of the policing regularly.



The Cody Matinée at the London Hippodrome.

A PACKED audience crowded every inch of the London Hippodrome last Tuesday afternoon to take part in the Cody *matinée*, some 2,000 being present. Artists and organisers alike played their parts well in paying a tribute to the "father of aviation." The performance lasted for over four hours, and consisted of a remarkable selection of "stars." A few of the artists who were unable to be present forwarded instead handsome donations towards the fund. Two special items on the programme consisted of the presentation of the Aerial League's gold medal awarded to the late Col. Cody, and the disposal of two tickets for passenger flights in an aeroplane at Hendon to-morrow, Sunday. The presentation was made to Mr. Leon Cody by General Arbutnot, the President of the Aerial League. Mr. Leon Cody, in a few simple words, thanked, on behalf of his mother, all those present for their response to the efforts of the Aerial League. After the presentation an auction was held for the two passenger flights. The first ticket was knocked down for £20 to a lady, who afterwards returned the ticket as a donation to the fund, and when it was again put up for auction it was purchased for £30 by another lady. The second ticket fetched £15. A telegram was read from Mr. Gustav Hamel, who was to have conducted the above auction, saying that he was sorry he was unable to be present as he was seeing Igo Etrich, from Hendon, out of England by air.

Models

Edited by V. E. JOHNSON, M.A.

The Travers Ayers Hovering Aeroplane.

THE machine is designed in the form of a tetrapod with cross bracings, this being the strongest method of construction. The engine is adjustable to allow for the most suitable centre of gravity being attained, and is mounted within the framework, and geared to rotate two vertical shafts in alignment, driving them in opposite directions, each of the shafts being provided with a propeller. The forces tending to cause torque being in equilibrium, the machine has no tendency to rotate about a vertical axis. A vertical propeller can be connected with the motor by means of a clutch to enable the machine to fly in a horizontal direction. The horizontal propellers thus giving the lift, and the vertical propeller giving horizontal flight, or the horizontal propellers can be stopped, and the side planes, which are composed of louvres to give least resistance in vertical flight, and operated from a central control, can be closed, thus enabling the machine to fly in the manner of a biplane; rudder and elevator being provided. The lower ends of the tetrapod are fitted with suitable floats to enable it to rise from and descend upon water.

In the case of a full-sized machine, the pilot and engine would be enclosed in a cabin furnished with windows or apertures to enable observations to be made in all directions. The outside of the cabin would be given a streamline formation in the upward and forward directions in order to minimise resistance.

The machine can turn upon its axis without banking by means of a rudder which is acted upon by the air draft of the top tractor.

When making a flight in the case of a full-sized machine, the pilot, having taken his station in the cabin, sets the two horizontal propellers in motion, the vertical propeller being held out of action. The louvres are set in the open position. When a suitable elevation has been reached the propellers are slowed down to the required speed, this enabling the machine to hover, or the louvres are brought into the horizontal position and constitute sustaining planes. The vertical propeller is now thrown into action, and then the horizontal propellers are slowed down or in some cases entirely stopped, the machine then flying as a biplane thus making use of the planes, which are essential in the event of the motor breaking down. The descent may be made by means of a *vol plané* if desired, or, by stopping the vertical propeller and altering the elevator, it will descend vertically. In either case the machine will always be in the vertical position and not inclined. When landing the descent can therefore be made at the required speed of the pilot independently of horizontal velocity.

It is therefore capable of rising from and descending upon confined spaces such as wood, stubble, ploughed field or even a street. It will rise from the deck of a battleship without the necessity of a platform, as it does not have to travel to enable it to attain the initial velocity for flight.

Its design is so that even when hovering it will not be so conspicuous to marksmen, as it is minus a long fuselage and tail, and the louvres would be open, thus not showing a large surface.

The above machine has shown itself capable of rising both from the surface of land and water. Power-driven helicopter models have previously been constructed capable of rising from the ground; but, so far as we are aware, this is the first that has shown itself able to do this from the surface of water with floats attached.

As we stated on page 970 in our remarks on helicopter competitions, if we take the case of an aeroplane designed to rise from and alight on the surface of rough water we are confronted with a problem which, as has now been pretty clearly demonstrated in the case of full-sized machines, is incapable of a really successful practical solution by any ordinary type of hydro-aeroplane. Whether the principle of the helicopter can be successfully applied to its solution is one that experiment alone can decide.

The difficulties to be overcome in the case of the helicopter are undoubtedly very great. From a commercial point of view the ordinary type of aeroplane is to be preferred as being more economical and more efficient mechanically, but, in the case of aerial machines intended for war purposes, economy of power or mechanical efficiency are only two factors amongst a number of others. There is, for example, the question which can be made the deadlier machine of the two, which can rise and fly in the roughest weather. A type of machine which could rise when another could not would, under these circumstances, apart from any other, be invaluable to the party which possessed it.

Now, since such conditions as the above do undoubtedly exist, we certainly think that such experiments as those of Mr. Travers Ayers are worthy of every encouragement.

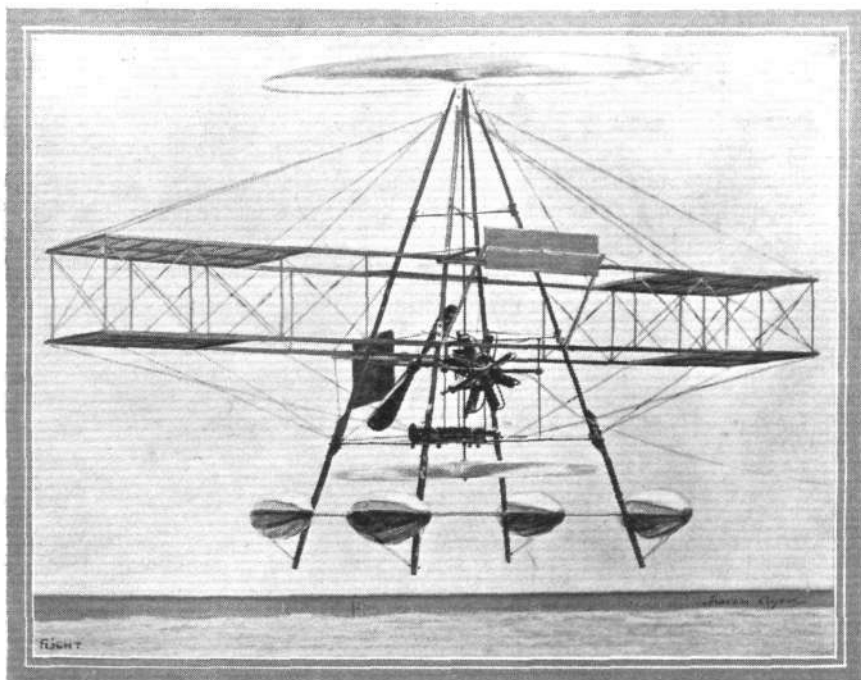
That the practical helicopter of the future (assuming for a moment such to come into being) will differ in very many respects from the one here illustrated, is highly probable, but there are certain features which Mr. Travers Ayers has incorporated in his design which strike us as being essential to any helicopter: the louvres, for instance, and the closing and opening mechanism of the same. In the model which we saw these louvres opened and closed about longitudinal axes. In some respects, lateral axes appear preferable.

The model is fitted with three propellers. Supposing the propellers which revolve about a vertical axis were stationary and the machine travelling through the air under the action of the third propeller (the louvres, of course, being closed), the two stationary propellers would offer considerable head resistance.

In a design for a flying machine which won a prize many years ago (before aviation became a practical science), the writer remembers that one feature of the design was the gradual alteration of the axis of propeller rotation—from the horizontal to the vertical (say) or *vice versa*.

Such has already been applied successfully in the case of the dirigible, and we see no reason why the same thing should not be done in that of the helicopter. The mechanism opening and closing the louvres could be arranged to work in unison with such. Generally speaking, the conversion of the helicopter movement into that of horizontal flight would be accompanied with loss of climbing power, if not actual loss of altitude, and would therefore have to be made at some distance from the ground. Such a change could very easily be accompanied with considerable loss of stability, and this is undoubtedly a point which would have to receive very careful attention.

The common mistake made by many that have tried experiments with helicopters is that the propellers which they have used for the purpose have been far too small. Mr. Travers Ayers' are larger than any others that the writer has seen, considerably larger, as a matter of fact, but we should



Mr. Travers Ayers' model.

not be at all surprised to learn that further experiments should lead him to add still further to their diameter. There is always more than one road reaching to any desired goal, and that the present type of aeroplane is the *only* one which can be made to navigate the air successfully we do not for a moment believe. Since the above was written, we have personally seen the model (which weighs over 10 lbs.) rise from the surface of the water (with floats attached) under its own power. The motor used was a CO₂ one, which, as many of our readers will know, is not the best type for the purpose.

Model Clubs for Edinburgh, Ilford and Nottingham.

Mr. G. T. Cooper, 41, Drumsheugh Gardens, Edinburgh, informs us that a model section of the Edinburgh Aeronautical Society has been formed; subscription, 2s. 6d. the half-year. A model aviation meeting will be held on Saturday, October 4th, at which there will be several competitions for silver medals and prizes, particulars as to place, &c., will be published later.

Mr. H. Oliver, 194, Kingston Road, Ilford, E., will be pleased to hear from anyone in that district interested in models, with a view to starting a model club in that neighbourhood.

Mr. G. Thorpe, 171, Castle Boulevard, Nottingham, desires to hear from anyone in Nottingham or district, who may be interested in model aviation, and who may be desirous of assisting in the formation of a club for models in that district.

Messrs. T. W. K. Clarke and Co.'s Catalogue.

The present catalogue issued by the above well-known firm, contains many interesting examples of the latest types of models, three examples of which we reproduce herewith—viz., a tail-type r.o.g. model, a "Blériot Canard" ditto, and a Canard type hydro-aeroplane. The firm also supply (amongst others) a Sopwith biplane model, either for use on land only or with floats and extra attachments for use on land or water. Length 30 ins., span 25 ins., carved 10 in. propeller, flies 150 yards after rising.

In addition to complete machines, sets of materials or parts are also supplied for those who prefer to make or fit up their own models.

The first model aeroplanes ever placed on the market, viz., "Clarke's Flyers," are still supplied, from a shilling upwards. There is scarcely anyone, we should think, interested in aviation who has not at some time or another flown one of these most interesting and instructive little models. Probably aviation owes more to them than to any other model. A few years ago one saw them in almost every toyshop. In the ordinary toyshops of to-day one can still see something that generally has a very high-sounding name, but is far inferior in every respect to these admirable little models. The "something" is almost invariably of French extraction.

Query.

A correspondent writing under the *nom de plume* of "Canard" says: "I have nearly completed a biplane glider of some 200 sq. ft. surface, and am at a loss to know what to dope it with. There are several excellent dopes on the market, but owing to cost they are quite out of the question for one's first machine. It has been suggested to me that linseed oil would make it air and water proof. It would be interesting to hear the opinion of the Birmingham Aero Club and others, who have done some practical gliding, on the above. My fabric is a fine twill unbleached calico."

[In any machine designed to carry a person anything in the nature of cheapness is the last thing that should be indulged in—allowing that a gallon of dope covers approx. 100 sq. ft. of surface—a proper dope can scarcely be considered prohibitive. Why not have used Pegamoid instead of unbleached calico? An active supporting surface of about 150 sq. ft. is sufficient to carry the weight of an ordinary man; a larger machine means of course soaring at a reduced speed; but, the larger the machine the greater the weight and the greater the difficulty to control the same when in the air. Personally, I have not found linseed oil proofing very satisfactory. —V. E. J.]

The Fulham and District Aero Club.

We understand that a club under the above title has recently been opened at 561, Fulham Road (opposite Walham Green Station). Hours 10 a.m. to 9 p.m.; Saturdays 10 a.m. to 2 p.m. at the club, and 3 p.m. to dusk at the flying ground. The objects of this club being to encourage mechanical engineers and students who desire to study models of well-known flying machines by exhibiting these at the club, and also to take up practical work at our aerodrome with a full-sized aeroplane and glider. These latter are to be bought or built for the use of members of the club, no exhibitions of or encouragement is to be given to "flying-sticks," but it is hoped to have the youth and young men of the district as members. Any lady or gentlemen interested in aeronautical development will be made heartily welcome. Public meetings are to be held to further the formation of the club, and both aeroplanes and seaplanes will be considered to meet the requirements

of the members. Further information (in booklet form) will be given to anyone who will write or call at the club at Fulham or write to "Pioneer," 17, Parrock Street, Gravesend, where a similar club is in course of formation.

Bristol and West of England Aero Club. Autumn Flying Meeting for Models.

This contest is to be held at the Sea Walls, Durdham Downs, on Saturday, October 4th, and includes: (A) Rising from the ground and weight-carrying duration contest; (B) Ornithopter and helicopter duration contest (minimum duration 10 secs.); (C) Duration contest for aeroplanes carrying no forward elevator or tail (Dunne type) (minimum duration 10 secs.); (D) Hand-launched duration contest. Event B is for club members of the model section, the other events are open. No entrance fee will be charged.

In Event B there is a minimum weight of 3 ozs., and the models must be capable of horizontal propulsion.

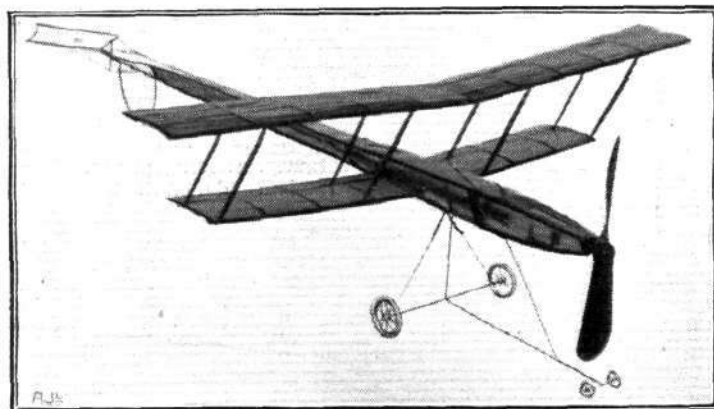
Further particulars, entry forms, &c., can be obtained from Mr. R. V. Tivy, 42, Royal York Crescent, Clifton, Bristol.

As the reader can at once see, the above competition contains several novel features (so badly wanted in model work generally), and should prove of especial interest.

Mr. J. F. Leeming's Olympia Model.

"The main object," says Mr. Leeming, "in designing this model, was to obtain a flyer as near scale as possible, and the only points that materially differ from the full-sized 'plane' are the length of the fuselage, and the fin or rudder, which are rather longer and larger than is usually the case. The model has not proved a very good flyer (longest flight about 120 yds.), but as it was not tried before the Show, and afterwards on the journey home a box was dropped on the top plane, it is not to be wondered at.

The chassis was designed of materials which were much too weak; so a stronger and simpler one than that shown in the photo has been fitted. Also the rubber shock absorbers have been replaced by



Mr. J. F. Leeming's Olympia model.

small spiral springs; while at the tip of the bottom plane two small skids have been fitted, which are found to greatly assist matters when the model lands sideways. The wheels shown in the illustration have been altered to Clarke's 2-in. disc type. The screw is a 10 in. Centrale, driven by two 12-strand skeins of $\frac{1}{8}$ in. square rubber by means of gearing.

In the front there is a hatchway of veneer wood, in which are two small mica windows; these are removable for the purposes of lubrication, cleaning, &c. A point that should be noted is that the tail may be adjusted to any angle from this hatchway, a control lever being fitted just under the back window.

The control is worked in the following manner: The tail is kept down by a tensional spring, while the lever carries a wire (passing over the top of the tail) so as to adjust this pull to the required degree. The following are the chief particulars: Weight 8 ozs., length 38 ins., span of top plane 32 ins., span of bottom plane 24 ins., chord 3.5 ins.; planes staggered forward at 68°.



KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

Competitions.—The fourth annual competition for the Association's Cup took place on Sept. 13th on the 100-Acre Field, Greenford, and as usual attracted a good entry. It was pleasing to see Mr. Bagshaw, representing the Sheffield Aero Club, present as a competitor. The judges, Messrs. J. Jewitt, B. Kirchner and W. H. Akehurst, made the following awards:—1st, C. C. Dutton, with 95 marks; 2nd, L. H. Slatter, 92½; 3rd, J. E. Louch, 79; 4th, H. R. Weston, 70½; 5th, H. G. Bond, 61; 6th, D. Laing, 52½. Mr. C. C. Dutton flew 558 yds., and he holds the trophy for one year, and takes the Association's Gold Medal; Messrs. L. H. Slatter and J. E. Louch taking the silver and bronze medals respectively. Mr. Akehurst, in presenting the prizes to the winners, stated that the President,

Sir John Shelley, was sorry not to be present, being unable to return to town for it. Messrs. L. H. Slatter and A. F. Houlberg went for the h.-l. distance record, but were both unsuccessful in beating it. Mr. Houlberg flew 627 yds. With the wind deductions taken off his flight was 520 yds. Mr. Louch went for the h.-l. duration, but could only obtain 105 secs., which he did with two out of the three flights.

Next Official Trials.—The next official trials will be held on Sept. 27th, on the Leytonstone Aero Club's ground at 3 p.m. Directions as to route:—Travel to Liverpool Street, then by Clapton Common or Leyton car, alighting at Down's Road, walk down Millfield's Road past the Clapton Orient Football Ground, and flying will take place on right-hand side. Or by train to Homerton (N.L. Raily.), thence by car to Down's Road, &c., as above.

Competitions.—The hydro. contest for single-screw hydros. takes place on the Rushmere Pond, Wimbledon Common, at 3 o'clock, followed by a junior duration contest on the Plain. Also scouts' competitions for the Grahame-White prizes take place at Alexandra Palace at 3 o'clock, and judges from this association will judge on behalf of Mr. C. Grahame-White, who cannot attend on account of the Aerial Derby.

Grounds Committee.—Mr. R. M. Balston, Vice-President and Chairman of Committee visited the grounds suggested by the Secretaries' Guild, and their decision will be published in next issue. The hon. secs. of N.E. London, Leytonstone, Wimbledon, and the hon. sec. and assist. hon. sec. of the association attended. The committee thank the chairman for having taken them to the various grounds in his motor car.

Model Competition.—Wimbledon Common, Oct. 4th, at 3 o'clock. Entries close Sept. 27th. Free to members; non-members' entrance free, 1s. Novices' duration and stability competition, for models rising off the ground. Prizes: 1st, aeroplane requisites, value £1 (presented by Messrs. T. W. K. Clarke and Co.); 2nd, silver medal of the association; 3rd, bronze medal of the association. Tests: A. Duration; B. Stability. Maximum marks, 100. 75 for test A; 25 for test B. Rules: 1. Competitors may submit models of any kind. 2. Models must not weigh less than 6 ounces. 3. Competitors must be at the judges' flag at 2.30 o'clock; those not present at that time will be disqualified. 4. Models will be timed from time of leaving ground till time of landing, or till they disappear from the judges' view. 5. Competitors will not be allowed to replace any part (or parts) without the permission of the judges. 6. Each competitor is entitled to three trials if time permits. Note.—A novice is one who has never won a 1st prize in a competition held under the auspices of the association.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.



CORRESPONDENCE.

Early "Flying" in Europe.

[1791] I wonder if any of your readers can throw any light on a passage which appears in "Entretiens sur la Pluralité des Mondes," by Fontenelle (Bernard), published in 1686 (Londres), 1707.

In that book, of what would be described nowadays as popular science, the author plainly refers to accomplished flying feats in this passage:—

"Les Ameriquains estoient si ignorans, qu'ils n'avoient garde de soupçonner qu'on püst se faire des chemins au travers des Mers si vastes; mais nous qui avons tant de connoissances, nous figurerions bien qu'on püst aller par les Airs, si l'on pouvoit effectivement y aller. On fait plus que se figurer la chose possible repliquay-je, on commence de ja a voler un peu; plusieurs personnes differentes ont tranve le secret de s'ajuster des ailes qui les sientiennent en l'air, de leur donner du mouvement, & de passer par dessus rivieres, ou de voler d'un clocher a un autre. A la verite ce n'a pas esté un vol d'Aigle, & il en a quelque-fois conté a ces nouveaux Oyseaux un bras ou une jambe; mais enfin cela ne represente encore que les premieres planches que l'ona mises sur l'eau, & qui ont esté le commencement de la Navigation. De ces planches-la, il y avoit bien loin jusqu'a de gros Navires qui pussent faire, le toure du Monde. Cependant peu à peu sont venue les gros Navires. L'art de voler ne fait encore que de naître, il se perfectionnera, & quelque jour on ira jusqu'a la Lune.

It is quite clear, therefore, that the writer, who was a scientist of considerable repute, had actual knowledge of successful attempts at flight in Europe.

[Free translation of the above French paragraph.]

"The Americans were so ignorant that they never guessed that a passage might be made through such vast seas; but we who possess so much knowledge, we realise that such a passage might be made by air, if one could but make it effectively that way (by sea). We think it more than possible, I reply, because we are already beginning to fly; several different people have discovered the secret of adjusting wings to themselves which hold them suspended in the air, and even of giving them movement, so that they are enabled to cross rivers or fly from one steeple to another. Strictly speaking, these were hardly eagle-flights, and they often cost these new birds an arm or a leg; yet this is but equivalent to the first planks placed upon the water, thus representing the beginning of navigation.

"From these few planks it was a great stride to the great ships that circumnavigate the globe. Little by little came the big ships. The art of flying is even still at its birth—it will be perfected, and some day we shall be able to journey as far as the moon."

O. F. ODELL,

Secretary, International Correspondence Schools.

International Buildings, Kingsway, London, W.C.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (25, CHURCH CRESCENT, MUSWELL HILL, N.).

SEPT. 20TH, practice; competition postponed. 21st, practice, 10 a.m. 25th, indoor meeting, 8 p.m., "Cabin" tea rooms. 27th, monthly competition (3s. 6d. prize), r.o.g. duration.

Leytonstone and District Aero Club (64, LEYSPRING ROAD).

SEPT. 21ST, at 6.30 a.m., members meet at Model Yacht Pond, Wanstead Flats; at 10 a.m. near Brickfields. Sept. 27th, the K. and M.A.A. official trials take place on this club's ground. Particulars of best way to reach the ground will appear under the K. and M.A.A. notices.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

FOLLOWING provisional committee elected Sept. 12th: W. Beale, B. Tear, A. G. Pugh, G. H. Kilshaw, W. F. Woods. Model flying meeting, Saturday, Sept. 20th, Sefton Park, 4 p.m. Meet Croxteth Road Tram Terminus. General meeting, Tuesday, Sept. 23rd. New members should communicate with the hon. sec.

Manchester Model Ae.C. (890, CHESTER ROAD, STRETFORD).

SEPT. 20TH, trials to select team to oppose the Sheffield Aero Club on Sept. 27th. Note change of address.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

SEPT. 20TH, r.o.g. handicap and certificate flying at Sudbury.

Wimbledon and District (165, HOLLAND ROAD, W.).

SEPT. 20TH and 21ST, flying as usual.

UNAFFILIATED CLUB.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

SEPT. 20TH, flying, Woolwich Common, 4.30 to 6.30 p.m.; Kidbrooke, 2.30 to 5.30 p.m. Sept. 21st, Blackheath, 7.30 to 10 a.m.; Lee aerodrome, 10.30 a.m. to 12.30 p.m. Second quarter of the South Eastern trophy competition last Sunday in this month.



Bending Wing Spars or Photographic Distortion?

[1792] The photograph published in FLIGHT for August 23rd is interesting as affording some support for the supposition that the wing-spars were bent at the time; but is hardly capable of furnishing any undeniable proof that they were so, since there must have been distortion of some kind in the photograph, the particulars published show that, and there is, of course, always the possibility that that distortion may be what is to be seen in the apparent bending. The possible causes of distortion in this case are two, want of rectilinearity in the lens, and the fact that the exposure is not simultaneous over the whole plate.

Any defect of the lens may be put on one side, if the complete lens were used, as I presume it was, for the photograph, and not merely a single combination of it. The fault is one from which quite ordinary doublet lenses are free; much more those of the highest grade, such as the "Goerz." If the single lens were used, whatever its make and excellence, then some slight distortion might be expected. I do not think the lens in this case is the cause of the phenomenon; but it would be easy to test the thing, if anyone thought it worth while, by stretching a tape and photographing it on the corresponding part of another plate.

What really discounts the value of the photographic evidence in this case is the form of shutter used, coupled with the fact that the camera itself was not rigidly fixed during the exposure. Had it been so fixed, there still must have been distortion of the kind referred to in your editorial note; but if the speed and direction of the movement of the blind of the shutter and the speed of the aeroplane itself were known, this distortion might be calculated and allowed for, although it would be an involved process. But here we have a camera held in the hand and swung during the exposure; and any irregularity in its movement, and some could not possibly be avoided, would distort the image, and distort it to an extent which cannot now be ascertained.

It is for this reason that the picture, while it may be taken as affording some confirmation of the supposition of bending, is not sufficient evidence in itself. We know there must be some distortion in it, although the chances are, of course, very much against it being exactly that one form required to support any particular theory.

R. CHILD BAYLEY,
Editor *Photography and Focus*.

A Memorial to Edward Petre.

[1793] May I trespass on your valuable space to make known that a memorial is being erected in memory of Edward Petre, the young aviator who lost his life at Marske-on-the-Sea on Christmas Eve last in an attempt to fly from Brooklands to Edinburgh?

The memorial is taking the form of oak choir-stalls, to be erected in the Catholic Church, Exeter, by next Christmas Eve.

As the Petres are originally a Devonshire family, it seems fitting that this memorial should be placed in the capital city of the county.

Probably Edward Petre's friends are legion, for everyone who came in contact with him was captivated by his lovable nature and his wonderful spirit of unselfishness.

It is with the object of letting such know of the project in view that I write this letter, for I feel that there are many who might be anxious to help in raising this memorial towards one whom to know was to love. The stalls are costing just under £200, and towards this sum £140 have already been subscribed.

Subscriptions may be sent to me to the Presbytery, Exeter.

The Presbytery, Exeter.

(REV.) C. W. SMITH.

September 12th, 1913.

Gyroscopic Action.

[1794] In reference to the article on Gyroscopic Action on page 1012 of your issue of September 13th—

In view of the character of the issues involved, it will probably be conceded that the definite statement in the report of the Monoplane Committee, to the effect that there is no reason for alarm from this source, does not remove this question from the sphere of proper discussion, since it would be equally deprecable to attempt to spread a general impression of safety from this or any other source, without satisfactory proof.

Assuming with this article for the moment, that the elevator offers all of the resistance to the precessional couple about the horizontal axis, and assuming that the figures there given represent the facts in a general way, as is evidently intended, it seems pertinent to enquire, how is the resistance of 2 lbs. per square foot on the 10 square feet of elevator surface, or a less amount on a larger surface, to be called into action, even when the pilot is forewarned?

Remembering that this resistance must act perpendicularly to the 20 ft. of leverage assumed, which in general is horizontal, it will be seen that the resistance must in general act in a vertical direction. To obtain such resistance upon the air, the elevator must be tilted to a degree dependent upon circumstances, but sufficient to secure a vertical component aggregating 20 lbs. upon the surface. The horizontal component will act to retard the progress of the aeroplane.

Just how a vertical component of 20 lbs. is to be secured mechanically whenever needed, it is difficult to see. It should certainly be co-incident and co-terminous with the precessional couple in order to be properly effective. If this be had by a mechanical connection to the lever operating the banking, it will not always be right, because the vertical component with any fixed degree of tilting of the elevator will be a function of the speed of the aeroplane relatively to the air. Since this relative speed is not always the same, even in a calm, and since it varies still more in wind, and since in the case when wind is blowing it is constantly varying as the aeroplane changes direction, it becomes practically impossible for the pilot to properly operate it at every instant, and the only safe way is to make the mechanical arrangements so that no such unbalanced couples will occur at any time. This will result in safety from this source, not only when the pilot is forewarned, but also in the more dangerous case when he is suddenly diverted from his course by an unexpected puff of wind, and this will be true whatever be the magnitude of the precessional couples, viz., whether they are confined to the limits assumed in the article in question or not.

To obtain a resistance of 2 lbs. per square foot on a plane of 10 sq. ft. area, it will require that such a plane should move in a direction perpendicular to its surface at a rate of about 30 ft. per sec., and in the case of sudden turning without the elevator being tilted, it will be evident that very little resistance would be offered by it, before the aeroplane had turned over 90° about a horizontal axis.

The construction required to effect the result of automatic counter-balance is another matter. Manifestly it would be ill-advised to introduce new dangers worse than those sought to be removed, but the existing faults should at least be recognised without undue alarm, and should be rationally corrected.

INO. W. CLOUD.

York Road, King's Cross.

THE WRECKED ZEPPELIN "L1."

REFERRING to the fearful calamity which we reported last week in connection with the Zeppelin airship the following is the official notification in connection with this disaster :

"The naval airship was thrown by the force of the wind downwards from a height of several hundred yards. She refused to answer the helm, and though the ballast and all movable articles were thrown out, she struck the water nose first, breaking amidships in several places.

"Then she began to sink.

“The airship was plentifully supplied with fuel and ballast, and the gas had not diminished. Her war equipment was not complete, and there was a crew of twenty aboard. Therefore the vessel was by no means overweighted, but owing to the unusually unfavourable change in the weather the accident must be attributed to a higher power. The disaster in no wise diminishes the fighting value of the Zeppelin airships.”

Considerable criticism is still being made in Germany in connection with the narratives and statements which have been made by those immediately concerned in the handling of this great airship, it being strongly maintained that she was much over-weighted, and that this was really the principal cause of the disaster. In consequence of the persistent statements, the following further semi-official announcement has been issued :—

"The distribution of weight was extremely carefully arranged, and that the accident was certainly not caused by an error of judgment in this direction. It is stated that the L.I. carried 1,860 kiloms. of ballast, together with 2,300 kiloms. of benzine and 200 kiloms. of oil, which, when the accident occurred, were also treated as ballast as far as the mechanical arrangements allowed. The airship was, however, carried up by the vertical currents to a height of 1,500 metres, and on this account the excess weight, which had to be negated by the throwing out of ballast or by employing more driving force, became very much greater than has been generally supposed."

GREEN ENGINE CO. (1913), LTD.

A PROSPECTUS of this company has been issued this week, no doubt in view of the splendid record which this British-built aviation engine has made during the *Daily Mail* round Britain flight by Hawker. By the great publicity given to the event, the Green engine was brought very directly into prominence with the general public, although its good work in the past has been thoroughly well known and appreciated by those who have been concerned with the movement of aeronautics.

The new company has a capital of £50,000 in ordinary shares of £1 each, the present issue being 37,500 shares at par. The prospectus states that the company has acquired all patent rights for the United Kingdom, France, Germany, Austria, Italy, Belgium, the United States of America and Canada. The advantages of the Green engine are set forth, specially drawing attention to its lightness, its ease of being efficiently silenced, and the advantage of being able to run it slowly, whilst its reliability is referred to in connection with its successful run in connection with the Patrick Alexander £1,000 International Competition, the six Michelin Competitions, in which it was successful in five, &c. It is, of course, impossible for the directors to give any definite figures in regard to profits, as it is only now that it has been possible to start placing the engine on a commercial basis for development, but there is little doubt that with the enormous strides which are likely to be made in the next year or two in aviation, that this motor will have a very fine start in obtaining for itself support, not only in this country, but in all parts of the world. The present issue provides for £25,000 cash working capital, the purchase price having been fixed at £25,000 payable in £12,500 in shares of the Company, and the balance in fully paid shares or cash at the option of the vendors. Nothing is payable in respect of goodwill, and no underwriting commission has been or will be paid. The directors are all sound practical business men, and comprise, besides the engineer, Mr. Gustavus Green, and Mr. Fred May, the managing director, Mr. T. O. M. Sopwith, of Sopwith Aeroplane fame, and Mr. Sydney Dawson Begbie, managing director of the Aster Engineering Co., Ltd., who have been manufacturing the Green engines for the Green Engine Co., Ltd. We wish the Company every success, and those who desire a full prospectus should apply to the secretary at the registered offices, 166, Piccadilly, W.

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